ComputerWeekly
Thursday, November 4, 1982

Toy firm sells off computer stake

by Robert Parry

TROUBLED toy maker Mettoy has sold off most of its stake in booming home computer company Dragon Data, to a group led by Prudential Insurance.

Attempts to diversify away from its traditional base of Corgi toys and Wembley footballs brought record losses to Mettoy in the first nine months of this year, including over £300,000 for development costs from the Dragon division.

"Dragon is a very exciting, booming project," says Mettoy's chairman of three months Bernard Hansom. "But Mettoy needs to get its borrowing down, and Dragon to be opened up to new investment. This way kills two birds with one stone."

Mettoy gains £900,000 – the difference between the £1.35 million it gets from Dragon's assets and business, and the £450,000 it invested in Dragon Data – to offset escalating borrowings. Dragon will get £2.4 million backing in equity and loan stock from the consortium.

Mettoy sold 81.5% of Dragon Data, set up as a wholly-owned subsidiary a year ago. The bulk (41%) goes to Prutech, a member of the Prudential group, with the Welsh Development Agency taking 22%, and the National Water Council, Fountain Development Capital Fund, F & C Enterprises Trust and Dragon Data executives taking 18.5%.

Mettoy retains 18.5%, with options to increase this to 35% by 1985.

"We would dearly have loved to keep it all, but that would have restricted Dragon," says Hansom.

170 jobs at risk as plan for UK CAD firm fails

by Andrew Thomas

ONE hundred and seventy jobs are on the line following the collapse last week of tripartite talks between three of the UK's leading CAD/CAM companies. Racal-Redac, Quest Automation and Compeda had been trying to form a UK super company, according to Compeda group technical director Norman Scofield.

"We were trying to put together a UK CAD company large enough to compete effectively in the world market," says Scofield.

Asked if talks were continuing with single companies, Scofield doubted that a merger of any two companies would provide the necessary size.

But following the breakdown of negotiations, Compeda managing director Keith Trickett is seeking new financial partners following the serving of redundancy notices on its 125 UK and 45 overseas employees.

Meanwhile, Racal is denying that it was responsible for the breakdown of the original talks. A spokesman for the company said that there were many small problems with the merger which singly would have posed little problem, but that the cumulative effect of them had caused the rift.

"We are not talking with either Compeda or Quest at the moment," says the spokesman, "but they shouldn't be ruled out of future talks."


FITZWILLIAMS (centre) . . . "There's nothing in the rumours."

City probes Case share placing

by Kevin Cahill

THE Stock Exchange is to enquire officially into allegations of a large share placing in Case stock just before the September announcement that the company was ending its relationship with word processor supplier NBI.

Company chairman Duncan Fitzwilliams says that there is nothing in the rumours which have been circulating. "I have examined the share register and there is no large transaction there".

Apparently a line of shares had been sold by a broker on the morning of the announcement, but this was in the normal course of broking business.

The ending of the relationship with NBI, which is US-based, resulted in Case showing a loss for the first nine months of the year of £21,000 net, compared with a profit of £631,000 for the same period last year.

The loss is not quite what it appears, however. The company, in the nine-monthly trading period ended October 1, 1982, shows a trading loss of £750,000 relating to the word processor business, and a further £286,000 write-off of goodwill for the same reason.

The accounts also reveal that Case sold the NBI word processor business and spare parts back to NBI for £850,000.

The real loss would appear to be about £359,000, and in the background turnover rose 32% to £14.7 million compared with £11.148 million for the same period last year.

According to Fitzwilliams, the company's traditional business produced profits of £729,000 compared with the £631,000 for the same nine months last year.

Industry analyst Neil Barton, of stockbrokers Cook Lumsden, says he maintains his forecast of full year profits of £1.8 million, ignoring exceptional items.

The exceptional item in this case is the NBI debacle, but the directors of the company won praise from the City for the speed at which they addressed the problem.

Commodore notches up 1m Vic sales

COMMODORE is claiming the crown for the first million-selling micro in the world. Sales of its Vic-20 in the US have already moved past 800,000, with another 400,000 expected by Christmas, while European sales are on target to hit 200,000 by the end of the year. In contrast Sinclair has sold 600,000 ZX81s, though this does not include the Timex TS1000 version, which would take volume to well over the million.

Hi-tech centre

DUNDEE is bidding to become a high-technology centre with plans for a £39 million, 120-acre business park. Emphasis is being placed on links between industry and Dundee University, a set-up which has proved successful for Stirling University.

Software Expo

OVER 100 companies are showing software products at Europe's second Software Expo exhibition and conference at Wembley on November 8, 9 and 10. Conference topics cover manufacturing management, office management, software management and microcomputer software. The event is an offshoot of the Expo shows held three times a year in the US. Further details from Interco Business Consultants on 01-948 3111

Firms in conflict

TWO large organisations in the computer measurement field are locked in conflict in Los Angeles. Boole and Babbage is countersuing Candle Corp for an injunction and damages to stop Candle selling products based on data in a disputed patent. A trial date is to be fixed during November.

DEC sales 'a bit slack'

by George Black

FIRST-quarter results from Digital Equipment show a disappointing rise of only 10% over last year to an operating revenue of $927 million. The indifferent figures were blamed on high development costs, the expensive marketing of the personal computer and of office automation products, as well as reduced prices.

"The results are not up to the performance of the last few years and sales have been a bit slack recently," said a DEC UK spokesman. OEMs were the first to slacken off in a recession and hopefully would be the first to recover.

"The signs are there that towards the end of this year we should start to recover," the spokesman added.

CSA offers half-price membership


THOMAS . . . Cowboys need not apply.

by John Kavanagh

SMALL services companies struggling in the recession are being offered an inexpensive entry into the Computing Services Association. Small software houses, microcomputer retailers and word processing bureaux are being offered half-price associate membership of the CSA so they can use its management advice services and take part in all its seminars, working parties and committee activities.

But cowboy outfits need not apply – the CSA is taking steps to ensure that disreputable companies cannot take advantage of the CSA's standing to promote their services and products.

"The industry is growing rapidly: there are over 1,100 services companies and the number is growing at 10% a year," said the CSA's new president, Peter Thomas. "But small and new companies are very vulnerable in the recession and high growth rates are becoming difficult to maintain, even for established suppliers. Small firms may lack the management and financial skills needed to keep growing."

Companies less than two years old and with fewer than 10 staff can now join the CSA as associates at £300. Normally companies have to have traded for at least three years and pay a minimum subscription of £600 a year.

LINE NOISE

UNCONFIRMED rumours from the only building in Westminster with nine bars, report that Ken Baker, presently IT Minister could soon be for the high jump – in the nicest possible way. He is said to have found great favour with the Leader of the Conservative Party, and will be promoted in Thatcher's autumn Cabinet reshuffle. No word on his replacement or where our Ken is going.

A SERC Perq perk-up could be on the way for ICL. *After lengthy evaluation of ICL's classy personal computer by the* Science and Engineering Research Council, *an order for a "considerable number" of the machines is to be announced by the Department of Education and Science very soon. The Department is also about to give the results of the tender for a system for the mysterious Education and Credit Transfer Information Service.*

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Compec Preview
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See you (and 40,000 others) at Compec

COMPEC, recognised as the major computer industry annual event in the UK, takes place next week at London's Olympia.

Once again we split our edition of Computer Weekly to cater for the increased coverage in two separate issues. Inside this issue is our usual news coverage backed by all the regular features.

In addition, there is a preview of exhibits on show at Compec running over 40 pages.

The jobs section will appear in a separate issue and will focus entirely on recruitment and education topics.

Since Computer Weekly took over sponsorship of Compec six years ago, it has grown to become the key event for all users and suppliers of computer equipment and related software and services.

More than 32,000 visitors came through the doors last year and some 40,000 are expected to turn up this year to see some 400 exhibitors displaying their wares, both hard and soft.

Compec is in the Grand Hall, Olympia, in West London, from November 16-19.

We will continue our policy of attracting serious DP professionals only and discouraging casual callers and students by charging a nominal £2 entrance fee at the door.

Coverage of all the exhibits is comprehensive at the time of our going to press, though latecomers will unfortunately have been left out of the preview inside. All in not lost, however. This year sees the introduction of Compec Daily, and each day we have roving reporters doing the rounds of the exhibits while others will remain on the Computer Weekly stand.

The Compec preview starts on page 21, and further details of our Compec coverage method are given there. We are constantly trying to improve the value and organisation of the information provided to benefit visitors and exhibitors alike and to help them make contact with the minimum of fuss.

The Recruitment and Education Supplement, also published this week, will look in detail at various aspects of the jobs market as seen from the points of view of experts in their fields.

PAYE deal for Plessey

by Kevin Cahill

PLESSEY last week won the final £5 million contract for the computerisation of PAYE, and made it an all-British show. Despite the rigorous application of GATT rules, no foreign company was on the short lists.

The contract for the data network and modem equipment has been awarded to Plessey Controls, of Poole, Dorset, with Lion Systems Developments and Micom Borer acting as the principal sub-contractors.

The portion of the contract awarded to Plessey is estimated to be worth about £5 million, but the company only admits to "several million." It extends from first implementation next year at Telford in the West Midlands, to completion of the last of 12 Inland Revenue centres in 1987.

According to Patrick Mill, a marketing executive at Plessey, the contract was put out to international tender, with a wide range of companies, principally American, submitting to the first round of tendering.

No American company survived into the short-list of three which comprised Racal and IAL, the British Airways subsidiary, as well as the winners, Plessey.

When the first £50 million element of the PAYE contract, principally for mainframe computer systems, was awarded to ICL on the old single tender basis, several US companies, including IBM, complained bitterly about the policy of favouring ICL for government contracts.

Most other major countries are signatories to the GATT agreements, but the UK did not become a party to the agreement until shortly after the award of the PAYE hardware contract to ICL.

By way of response IBM took the unusual step of issuing a Press statement shortly before the Swansea Driver and Vehicle Licensing Centre computer contracts were announced, making clear that IBM would go to court if the government failed to observe the GATT agreement.

In the event both IBM and another US company, Honeywell, were short-listed for Swansea. But the only serious US tender for the PAYE network came from Burroughs.

The project, apart from the control software which is being supplied by the UK subsidiary of Computer Sciences Corp of the US, is now totally UK in terms of information technology equipment.

ICL is supplying the mainframes for the 12 regional centres as well as the terminals for 580 local Inland Revenue offices involved.


NEWELL . . . "New technology is usually a creator of jobs".

Get behind IT, Alison tells bosses

by Ron Coates

UK INDUSTRY leaders need to believe positively in technological change and should do far more to help the information technology revolution along.

That was the message given last week to the annual conference of the Confederation of British Industry by the only speaker from the UK's software industry, Alison Newell, managing director of consultancy F International.

And she gave the assembled chiefs of UK industry a wigging. Newell said: "Although technology is on the conference agenda, I was disappointed to find no reference at all to IT82 in the CBI conference papers.

"Leaders of UK industry need to believe in technological change. That belief must be backed with investment and with training and the job opportunities will rightly follow."

Newell admitted that technology was a threat to many jobs. But she added: "Is it a threat to jobs as a whole? I think not. History has shown that technological change increases the number and diversity of jobs available. The last estimate showed the UK is short of some 50,000 computer technicians. The Department of Industry estimates that a million jobs are directly attributable to IT – an industry not yet 30 years old".

The aim of industry should be to create a working population willing and able to welcome new technology for what it is, she told the 1,000 delegates. "New technology is usually a creator of jobs."

"But they are jobs which require people to be flexible, learning new ways of doing things rather than clinging to the obsolete and economically doomed methods."

Newell later told Computer Weekly that it was the top executives who were frightened of technology. "The top people, of 45 and over, have not grown up with it in their training years," she said.

■ See Leader Comment page 13.

National plan for hospital records

by George Black

A NATIONAL plan for computerising hospital information records has been recommended by a working party of the Korner Committee. And it takes pain to avoid the contentious area of confidentiality of patients records.

The report, from a working party set up by the health services information steering group and submitted to Health Minister Norman Fowler late last month, says there should be a "minimum set of data collected by a single patient information system".

"Health service managers have not been getting the data they need to take decisions," explained a Health Department spokesman. "The steering group is to find out what can be done to put this right."

But no names would be mentioned on te database, assured the working party secretary Michael Dunning. "The details that would be kept would include age, sex, district and treatment given, but there would be no breach of confidentiality," he said.

The patient notes system would be administered on a local level, not nationally. Management would receive only an abstract from the individual's hospital spell.

Consultations would be recorded and numbered and all births would be added to the files automatically. There would be an annual census on all mental patients in care for over a year and on legally detained patients. A committee would be set up to handle the questions of privacy an data protection.

Details of the use of ward beds would be compiled and computerised out-patient systems introduced. Data would be collected on te use of operating theatres, day care facilities and accident departments and a resources inventory kept.

The working party could estimate the cost of bringing in or of running its proposed systems. But it did say that take-up of data for all aspects of the project ought to be under way by January 1986.

The steering group was appointed in February 1980.

Greatest cost is expected to be caused by regional health authorities having to change their systems.

NCC gives hope to DP jobless

by John Kavanagh

UNEMPLOYED computing trainees have been given new hope by the National Computing Centre with the launch of a job matching register which also offers employers a cheap way to find raw recruits.

And the new scheme, announced at a Manpower Services Commission conference this week goes some way towards providing a national aptitude standard for comparing potential employees.

The register is open to unemployed graduates and people from recognised computing courses such as the government's Threshold scheme for school-leavers and Tops programme for people seeking career changes, plus "professional" examination courses for British Computer Society and Institute of Data Processing Management qualifications.

For £5, a person still unemployed after one of these courses can take a wide-ranging battery of NCC aptitude tests and get on the register. The tests range from numerical reasoning to observation, clarity of thought and clerical accuracy. Each test is graded separately.

Information on each person is held on a Digico minicomputer system run by the NCC. Employers can search the files using various criteria, including age, address, qualifications and equipment and languages studied. They are told of matches, and can ask for details on specific people, including the results of their aptitude tests. Each set of information costs the employer £40.

George Penney, careers project manager at the NCC, said that with these charges the scheme was expected to break even, with the costs of running the aptitude tests also covered.

He said the register could offer employers thousands of people to choose from. Tops students run into thousands every year and 1,500 unemployed school-leavers go through the Threshold scheme. About half these people get jobs immediately.

The register was partly the idea of the Institute of Data Processing Management. Secretary-general Ted Cluff said the scheme could help overcome the problem employers have when they advertise for trainees: being flooded with applicants. Now they could go to the register instead.

PENNEY . . . Thousands of staff.

MINNOTTO . . . Nine months' negotiation opened the doors to the UK.

Biggest computer chainstore for UK

by Ron Coates

THE world's largest computer shop chain last week set up in the UK, after three years' frustrating wait.

The 300-strong ComputerLand franchise chain last Thursday opened its first UK personal computer shop in Southampton and aims to open another 10 by the end of next year.

ComputerLand was poised to open stores in the UK in 1979 but was prevented from doing so by legal difficulties over its name. The Byte shop chain had registered Computerland as a trading name.

And while the US chain's European arm negotiated with the then owners of the Byte shop, the group went into liquidation. It was bought from the receiver by UK micro maker Comart which was then determined to retain the name for its own trading use.

Earlier this year the US company negotiated a deal with Comart which allowed it to start operations in the UK. James Minnotto, ComputerLand Europe executive president, said: "It took about nine months of negotiation, I was over here 10-12 times."

ComputerLand will be selling the Comart Communicator micro and Rair's micros.

And Minnotto promised a boost for UK software writers. He said: "We are hoping that people with good products will see us as an opportunity to sell them."

England set to rescue 60 viewdata users

by Donald Kennett

SOMERSET-based England Electronics is preparing to rescue the 60 users of Technalogics viewdata systems left unsupported when the company went into receivership last month.

But the founders of the failed NEB-backed company are making a last-ditch attempt to get back into business. Founders Andrew Polkowski, Laurence Cook and Mike Siddles are having talks with the NatWest Bank – the backer that called in the receiver.

England's viewdata product manager, Richard Davies said his company wanted to concentrate on its own Miracle viewdata terminal, which also has about 60 users, rather than talking over production of the larger floppy disc based editing system Technalogics had made.

But maintaining the systems already installed would fit in well with its existing maintenance arrangements.

He wanted to assess the demand from Technalogics users before making a bid for the software rights and stock of spares at Technalogics' Liverpool factory, he said.

Polkowski said that the market for offline editing systems for Prestel had been too quiet to sustain his company, but that putting more effort into diversifications such as its Carousel shop-window viewdata display system would give it a viable basis.

He was also anxious to fulfill the £750,000 contract won from the Department of Industry earlier this year to supply 100 systems to Information Technology Education Centres (ITECs) over the next two years. The take-up of these had only just started, he added.

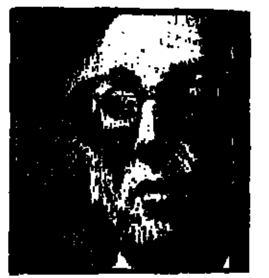
Sirius to buy out Victor

by Robert Parry

THE distribution war between rivals ACT and DRG for their versions of the American 16-bit from Sirius Systems Technology has taken a further twist. Maker manufacturer Sirius Systems is now negotiating with Kidde, one of its initial backers, to buy Victor Business Products, the Kidde subsidiary that markets the Victor 9000 version as sold by DRG.

Discussions are not yet complete, and the effect of the merger on the two UK distributors is uncertain. But Chuck Peddle, founder of Sirius Systems and most likely president of a merged Sirius and Victor, is due in London this week to clear the muddy waters.

Despite implications from the US that the merger of the two companies would result in the machine appearing only as the Victor 9000, ACT is confident of its position here and of the future for the Sirius 1.



PEDDLE . . . likely preside

"In European markets the machine will be marketed as the Sirius 1," says ACT group marketing director Roger Foster, dismissing the idea of only the Victor label surviving as "just nonsense". He adds that Chuck Peddle sees ACT, currently his biggest distributor worldwide, continuing as the number one UK distributor.

One advantage ACT is keen to push for its offering is a so-called "special relationship" between ACT and Sirius Systems, by which Peddle is said by ACT management to have guaranteed early access to technology developments and improved systems.

If Sirius Systems does buy Victor Business Products this, coupled with a similarly quoted extra link in the supply chain, would disappear. Both ACT and DRG would become distributors directly of Sirius Systems products, whatever label they were sold under. The merger would give Sirius Systems greater control over the marketing of its product, and perhaps reduce ACT's influence.

Victor has exclusive marketing rights in North America, and non-exclusive worldwide, but its sales of the machine have been disappointing. Putting the Sirius Systems marketing expertise behind Victor would give a welcome boost to sales, which are said to have been very slow in the US.

Two months ago Victor moved into the lucrative UK market through distributor DRG Business Systems.

NCCL demands £5,000 daily fine for privacy law breach

by George Black

FINES of up to £5,000 a day for holding unregistered data on personnel are recommended in the National Council for Civil Liberties' alternative to the forthcoming government Bill.

"If the legislation is to have any effect there must be strong deterrents to keeping secret information about people's private lives," said the Council's general secretary, Patricia Hewitt.

"Heavy fines would only be imposed by the courts if it was a gross case of malicious intent," she said. "Where the matter was less serious, we would expect a warning to be issued first, if it ever reached the court."

The council was worried that because the government's Bill was to be introduced (unusually) in the House of Lords, it would receive less careful scrutiny than if it had come in via the Commons.

"But we are going to make sure there is a full public debate. We must not let the government put through a law which does not cover records kept manually, which are the source of the majority of complaints, and does not give adequate powers to the registrar."

The council's plan was to use its own data protection Bill as the basis for amendments to the official version and as a safeguard in case the Cabinet decided to shelve the business altogether.

Its chances of success depended largely on whether a private Member could be persuaded to adopt the cause in the ballot for parliamentary time.

"At present many of the complaints we receive we are not able to investigate because we can't find out why people have been treated unfairly," she said. "They lose their jobs on the basis of an employer's reference and it's impossible to know the details."

Broad support for the council's ideas from backbenchers on both sides of the House was expected. Among the proposals which differ from the government's are an appeals tribunal and a statutory right of access for individuals to all information recorded about them.

The NCCL is also strongly opposed to the anticipated exemption of certain organisations, such as the police and government departments, from the legal provisions. Under the official scheme such bodies would not be obliged to register their databases or open them to the inspection of privacy watchdogs.

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BT Bill 'most ambitious measure ever' for MPs

by our Parliamentary Correspondent

THE proposed Bill to denationalise British Telecom – one of the features of the Queen's Speech programme for the new session of Parliament – was hailed by the Prime Minister last Wednesday as "the most ambitious measure of the kind ever to be presented to the Commons".

Labour MPs, with union backing, are expected to fight tooth and nail against the measure.

And the long-awaited Data Protection Bill has been put into the government's formal legislative programme for the new session of Parliament. But the government is likely to resist pressure from some backbench MPs, led by the Oldham MP Michael Meacher, for the scope of the Bill to be widened to cover not only computer-stored information but data held in manual filing systems.

The long title of the Bill, which will govern the scope for amendments, will probably describe the Bill specifically as a measure to protect personal information held on computers.

If so, strict interpretation of the rules by the Speaker and Chairman of Committees could rule out of order the attempt to cover manually filed records.

Thatcher said the BT Bill would offer real opportunities for growth in the telecommunications sector.

There are high hopes in the government that the injection of private capital will overcome British Telecom's past investment problems.

The new regulatory body, to be called the Office of Telecommunications, will be set up by the Bill, aimed at ensuring fair competition in telecommunications, and to prevent exploitation by British Telecom of its dominant position.

The Bill will also tighten controls on the availability and use of illicit wireless telegraphy apparatus.

The proposed data protection legislation will give broad effect to proposals contained in the White Paper on data protection: the government's proposals for legislation which were published last April.

The main proposal is for establishing a Data Protection Registrar charged with maintaining a register of all users of automatically processed personal data. But there will be certain exemptions to cover information with a bearing on national security, and probably also police and health records.

The Registrar will supervise compliance by data users with the principles of data protection that were outlined in the White Paper.

Individuals will be given a right of access to data held by them – except for the exempt categories which will be set out in a schedule to the Bill. They will have several court remedies open to them if their interests are harmed by the use of inaccurate data.

The legislation will also enable the UK to ratify the Council of Europe Convention for the protection of personal data. This Convention set out standards covering the automatic processing of information.

Determination action by the government to encourage British industry to exploit the latest technological advances was expressed strongly by Thatcher in the debate on the Queen's Speech. She promised MPs that the Home Office would be announcing soon the government's conclusion of Lord Hunt's report on the development of cable television.

William Whitelaw, the Home Secretary, asked Lord Hunt to undertake an enquiry into cable expansion and broadcasting policy following the report back in March on cable systems carried out by the Information Technology Advisory Panel.

Lord Hunt's report, published on October 12, recommended that the government should give the go-ahead for wideband cable development.

■ Leader Comment – page 13.

McHUGH . . Doubling staff and manufacturing space for new system

Micro maker links with travel agents for £30m market

by John Kavanagh

UK microcomputer manufacturer Future Technology Systems has formed an unlikely partnership with British travel agents to set up a company selling a travel agents system. The market for the system is valued at about £30 million in the UK alone.

At the same time FTS is doubling its staff and manufacturing space to handle a move into bespoke systems. This move has been boosted by a £3 million order from Office and Electronic Machines, which is expanding from word processor distribution into office computers. And FTS is set for a further boost on the software front from this order: Office and Electronic Machines is getting applications packages from the big US supplier Peachtree adapted for the FTS machines.

The new travel agents system company, Tourism Technology, is owned 45% by FTS, 25% by the Association of British Travel Agents and 20% by another travel trade group, the Travel Agents Consortium for Investment in Technology. The other 10% has not been issued.

FTS is putting £100,000 into the venture. FTS managing director Peter McHugh and David Heard, chairman of the ABTA project co-ordination group, are the directors of Tourism Technology.

The new company was formed following the collapse of a Canadian tour firm, Caltrav, and its UK subsidiary, Travel Systems, which was working on the travel agents package. That project was backed by ABTA and used FTS hardware, with software from Logica. The UK software company is staying with the project but is not taking a stake in Travel Systems.

"We have declined equity participation, not because of a lack of confidence but because the project does not fit in with our investment profile," Logica said.

The travel agents system, called Modulas, is based on FTS 16-bit Series 88 microcomputers. It will incorporate word processing, credit card reading and telex, viewdata and packet switching links. It will offer the chance of links to reservation computers run by airlines, tour operators and hotels.

"The system costs £5,000 and upwards – and there are 5,000 travel agents in a position to buy it in the UK alone," said an FTS spokesman. "There is also good export potential, for travel agents have similar accounting and administrative methods worldwide."

Boost for UCSD operating system

by Robert Parry

SofTech Microsystems is setting out to put its UCSD p-System up with the leaders in the microcomputer operating system stakes. It is building on portability, the ability to move applications among different hardware systems running the operating system.

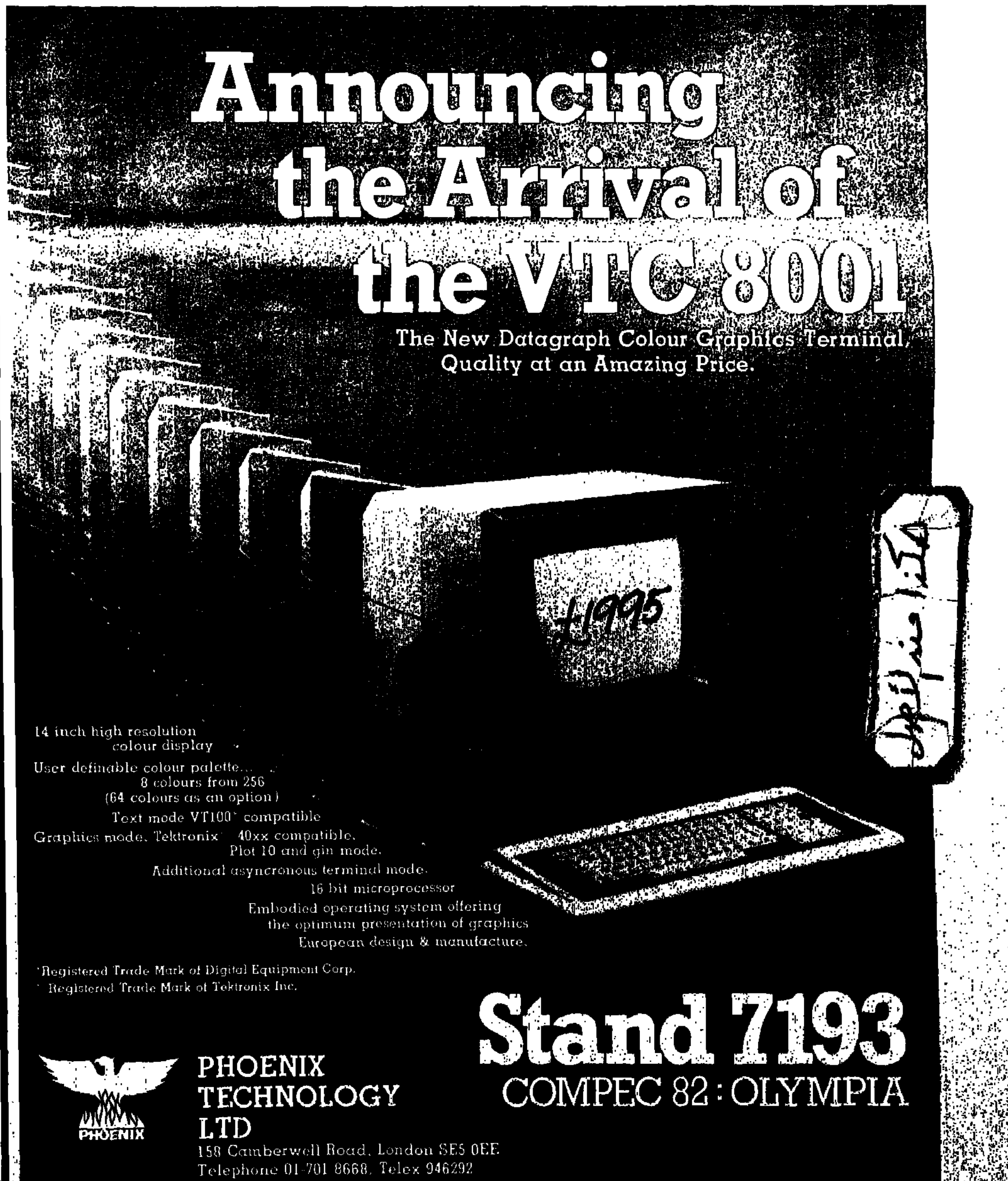
Spearheading the move in the UK is SofTech Microsystems' largest distributor here, Bristol-based TDI, which has just invested $250,000 in new licences for the UCSD p-System. This is the largest UK deal for SofTech Microsystems, and puts TDI among the largest licensees. Most of these are US hardware manufacturers, and TDI is the only non-manufacturer in the world to become a high volume licensee.

"We are delighted with our relationship with TDI," says SofTech Microsystems president John Splavec. "They are our first high volume licensee in the UK, and for a software company they have achieved the sales volume to support the licence in record time."

Splavec, who joined SofTech as president of the Microsystems subsidiary from Informatics six months ago, is currently in Europe, spreading the p-System gospel rather as Digital Research's Gary Kildall and Microsoft's Bill Gates have been doing recently for their CP/M and MS-DOS operating systems.

Splavec sees the UK, Germany, France and Scandinavia as the promising European markets to concentrate on, working through large established distributors like TDI. He is aiming to sell to hardware and software OEMs as well as to end users – people he characterises as "those who have been through the mill of incompatible software and can see the difference between some people's so-called portability and our universality."

The recent adoption of the UCSD p-System by IBM for the Personal Computer and the Displaywriter, adding to the list of influential hardware vendors supplying the p-System for their hardware, has helped SofTech Microsystems gain acceptance.



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EEC funds chip manpower study

by John Riley

MANPOWER problems which are holding back the European semiconductor industry, particularly the flow of engineers to the US, will be scrutinised by a European Commission funded study.

"The EEC is worried about the state of European innovation and research and development in microelectronics, and about the inroads by the Japanese and Americans into this field", says Richard Pearson, head of the Institute of Manpower Studies Labour Market Group. He will shortly be announcing a grant worth between £20,000 and £30,000 to study manpower problems in the European semiconductor industry.

The actual sum is still being decided but half will come from the EEC in Brussels, and the research, which begins next week, will survey between 25 and 50 firms within the EEC.

"The aim is to examine the extent to which manpower problems might be holding back European development, for example the flow of engineers to the US," explains Pearson.

The survey is expected to be completed by next summer.

The grant follows a £55,000 grant to IMS from the Leverhulme Trust, announced last week, to find out how many of Britain's engineering undergraduates are sponsored by industry. "Up to half of Britain's electronic undergraduates may be sponsored by industry but nobody knows for sure", commented Pearson.

"The information will help companies to develop a cost effective recruitment policy, will help us assess the recruitment problems experienced by firms that do not sponsor, and would be important background should the government decide a policy of student loans. Essentially we are asking if firms get value for money".

The two-year project aims to sample 1,000 first and third year undergraduates in each engineering discipline (covering chemical, civil, mechanical, and electrical and electronic engineering), in about 30 universities and polytechnics.

£2½m grants for Edinburgh

by Robert Parry

UNIVERSITY of Edinburgh has gained a further £2½ million for its chip making activities. The Science and Engineering Research Council has awarded two grants to the microfabrication facility in the Department of Electrical Engineering – £750,000 to keep its LSI fabrication service going and £1¾ million to re-equip the chip production facilities.

The new equipment will include a £550,000 wafer stepper from US firm Optimetrics, and £250,000 of gas etching systems. These will allow the unit to produce much denser chips, moving from five micron geometries to one-and-a-half microns. The Optimetrics wafer stepper will be the first in Scotland, despite the preponderance of microelectronic manufacturing there, and bring the number in the UK to four.

"Research and development are crucial if we are to provide the new generation of technology and engineers trained in it," says John Robertson, director of the Edinburgh microfabrication facility. "Along with R&D staff in industry and commerce, we are looking to the production of a single silicon chip with 1,000 times the capacity of a present-day microcomputer."

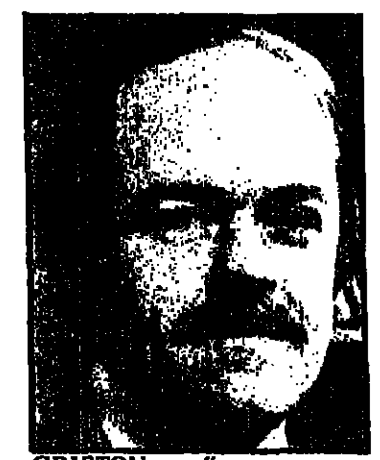
The new denser chips are unlikely to appear before 1984, says research fellow Bob Holwill. This is mainly because of the time needed for characterisation and process development once the equipment is installed. "You have to look at every aspect of the process when you start shrinking from five down to below three microns," he explains. The chips will probably be used for applications like image processing.

Despite this activity at the research end, pushing the unit's capabilities well into the forefront of microelectronic technology, the main function of the microfabrication facility is to provide a service facility to support research groups around the country.

Thirty university teams use the production lines to turn chip designs into silicon, using the five micron NMOS process at Edinburgh. Mask making for this is done at the Rutherford Laboratories. The Edinburgh unit was set up with a large SERC grant in 1978 to fulfill this service function, and it is the recurring SERC grants that keep it going.

"These newest grants are adequate," says Holwill, "but only just. We had hoped for more, and some of the trimmings have had to go." For example, more basic models of the main equipment have been specified.

Compec launch of 2000lpm printer



GRIPTON . . . "puts us on a par with IBM."

by George Black

THE first 2,000 lines a minute printer to be introduced by Dataproducts, the world's largest independent manufacturer of the machines, is due for launch at Compec next week.

John Gripton, market development manager, said Dataproducts was responding to market pressure, which now thought 1,800 lpm insufficient.

"It will put us on a par with IBM who set the industry standard," he said.

The BP2000 band printer will continue to be made in California. It will be top-of-range for the BP printer family, designed for mainframe and heavy duty systems. With a swing open band gate, ribbon changing and paper loading are simplified.

Dataproducts, with $270 million turnover worldwide, does a quarter of its business in Europe and has set up companies in the UK, France and Germany to sell equipment to small OEMs and distributors.

The Dublin factory, which received a $12 million investment boost last year, is backed up by the European Customer Service Division supporting large OEM makers of its band printers.

Compec at Olympia next month will also feature the DP55 and DP35 daisywheel printers, as well as the M-Series matrix printers M100 and M200.

CAD/CAM scheme slow response

by John Riley

RESPONSE by industry to the £6 million DoI subsidised CAD/CAM Awareness Scheme set up last spring has been slow. Bill Henderson, deputy head of the Department of Industry's Mechanical and Electrical Engineering Division 2, who is looking after the scheme, admits that in places participants "have been a bit thin on the ground". But he adds, "Companies now say that they have got to get into CAD/CAM facilities and their resistance is crumbling".

The machine is designed to educate and to promote confidence in CAD/CAM for potential users through a series of subsidised programmes. These include seminars for senior management, visits to companies using CAD/CAM, Practical Experience Centres (PECs) and capital grants for equipment purchase.

An important part of the scheme was the establishment of five geographically distributed PECs within existing institutions with CAD/CAM facilities. These organise visits followed by consultancies and hands-on experience.

The unequal state of readiness to receive visitors is reflected in figures released by the DoI which show that 636 visits were made to the PECs to the end of September. The breakdown is: National Engineering Laboratory, Edinburgh 21; British Ship Research Association, Wallsend 86; CADCentre, Cambridge 96; Machine Tool Industry Research Association/UMIST, Manchester 98; and Delta Computer Aided Engineering 335.

The PEC at the NEL is barely underway and is still installing capital equipment. According to Delta's director and general manager, Hugh Humphreys, the PEC there "can handle 30 visitors a week and is at present running about half capacity". The number of visitors there had topped 400 by last week and of these, "10 to 20 per cent have gone on to consultancy etc".

Delta is the only PEC to have a full CAD/CAM system from draughting to production tapes to manufacture.

BSRA and CADCentre have been getting about one-third of the visitors they could handle. Of 105 visitors, mainly from manufacturing industries, at CADCentre to last week about 26 have gone on to consultancies.

CADCentre has just introduced a series of week-long workshops to encourage managers and engineers to gain hands-on experience.

With Cambridge Instruments' new Q10 vision analyser, components like this glass reticle will no longer need to be inspected by the human eye.

Personal computer aid for cancer treatment

by Philip Hunter

COUNTING of tumour cells in cancer patients could be cheaper with a personal computer just released by Cambridge Instruments. The company's Q10 is designed specially for detecting minute differences between television pictures, and is aimed particularly at medicine, and the semiconductor industry, where the images being compared are too small for the human eye.

The Q10 costs £10,000 and embodies image processing power previously available only in expensive, or hardwired dedicated machines.

"It incorporates many techniques of higher priced sophisticated image analysis software," says Cambridge business manager Geoff Jenkinson. Unlike previous products, it is not designed specially for particular applications like quality control, but can be "softwired".

This means that the machine can be updated as the details of an application change. It might, for example, be used for checking car components, which change in size frequently.

But Cambridge will be selling the Q10 to OEM companies such as Olympus which will write software to tailor the machine for applications like seed sorting in agriculture, and automated packing and quality control of sweets in the confectionery business.

In some cases though, says Jenkinson, Cambridge would write software itself. This would be developed on the company's large Quantimet 900 analyser and then "kicked downstairs" on to the user's own Q10.

Jenkinson believes one advantage of the Q10 over some of its competitors' rival machines image analysers is the ability to analyse at once a multitude of objects in its field of vision. It can, for example, measure the brightness, shape, size, length, width, and centre of gravity of each individual chocolate on a tray.

Cambridge is one of the oldest scientific instrument companies, but nearly closed in the late 1970s when it was losing £3 million a year. Now it is profitable again, and in the last financial year, ended March 1982, it made £1 million from turnover of £22.7 million.

Device to 'safeguard any program'

by George Black

SOFTWARE houses worried about protecting their copyrights have been showing interest in a new device which, it is claimed, will safeguard any program on any machine.

"You can copy a disc as many times as you like, but you won't be able to use it without permission," says Ashley Ward, managing director of the company that developed it, Intelligence (UK).

"It works on the key principle that each program has a different protection device, but the same one for all computers. It's about the size of a box of matches."

At present users have to switch devices when they change programs, but the company is working on a box which will make the switching automatic.

Ward declines to call the invention a dongle: "a horrible bit of jargon that means nothing to anyone outside the industry," he says.

Quest for the PoS market

by Donald Kennett

QUEST Micropad has broken into the point-of-sale market with its handprint data entry terminals.

An order worth £200,000 has been taken from Remington Products in the US, which plans to use 65 Micropads in 32 point-of-sale positions in its own shops. They will be linked to a Sperry Univac mainframe at head office in Connecticut, saving postage and data preparation costs by inputting directly through a standard sales ticket.

Quest took the original design for a data entry tablet from the National Physical Laboratory in 1972. It had been developed primarily with signature verification in mind, but an early possible alternative use was for sales order entry, where data could be validated as it was captured and rekeying would be reduced to a minimum.

SALES BRIEF

Philips wins £2.5m deal in Sweden

DUTCH-OWNED Philips has won a £2.5 million order from the Swedish Telecommunications Administration Televerket, for a series of message management systems.

The system comes in two parts: one to communicate between different services such as the old telex and new videotex; the other called Mailbox, to store messages being transferred from one service to another.

Honeywell first

MINISTRY of Defence has awarded the first UK contract under the EEC Competitive Tenders Procedure to Honeywell for the medium-size DPS7 computers. The recently nationalised French giant CII-Honeywell Bull designed and built the computers.

Sage for ICL

ICL has bought a Sage expert system from the systems company SPL International for about £10,000. This is the ninth and most prestigious sale of Sage since its launch in May. Earlier purchasers included ICI and Shell. ICL says that Sage will be used to help development projects for the DM/1 and Estriel mainframe computers due for launch in 1985.

CAD success

PRIME UK has won four orders for its 2250 multi-user minicomputer since its launch last month. The orders are all from companies involved in computer aided design: Applied Research of Cambridge, CIS Products, [illegible] Computer Systems and [illegible] Computers.

SDL million

INDEPENDENT UK consultants Systems Designers have capitalised on the rising popularity of electronics funds transfer in the City with over £1 million sales in the last year. Most of the work has come from CHAPS, the Clearing House Automated Payments System, which links the clearing banks through a Tandem computer. Chaps was designed to clear all sterling transactions on the day they are made.

Same again

NORTH Thames Gas has bought a second Gould SEL computer for technical applications, including network analysis of gas pipes, and storage and pressure control. The SELs have taken over scientific computing from the Board's mainframe computers which are better suited for commercial activities like payroll.

Blood analysis

COMPUTER Technology has strengthened its grip on the blood samples analysis market with a sale of its Phoenix pathology system to Huddersfield Royal Infirmary. Seven of the 14 English regional health authorities now have Phoenix, which runs on the CTL 8000 system.

Remote control

SOFTWARE for remote control and data capture has won Sussex-based ATS Telemetry a £200,000 contract from Merseyside and North Wales Electricity Board. The software runs on Digital Equipment PDP-11/23 minicomputers under the RSX11 multi-tasking operating system.

$750,000 drives

GEMINI Microcomputers of Amersham, Bucks, has ordered $750,000 worth of minifloppy [illegible] inch disc drives from the Micropolis corporation. The drives will be installed in units in the Galaxy general purpose small business [illegible]

First cable systems 'by late 1983 if Govt acts'

by George Black

THE first cable systems could be running by the end of next year, if the government gives the go-ahead before Christmas, said Mike Aldrich, chief executive of Rediffusion Computers this week.

Aldrich, who was co-author of a government report on the subject published in March, said the government should order British technology, which was "streets ahead" of foreign competition.

"Sixty per cent of US cable will have to be replaced around the end of the decade," he argued. "The rewiring should use British switched broadband technology. This will create a thriving cable industry in this country for the next 100 years and we can be the world leaders in the field."

He thought there was a good chance that the government would make the right choice because it meant creating jobs and getting investment. They would therefore avoid the "off-the-shelf, quick buck" option of buying US technology.

ALDRICH . . . "Avoid the quick buck option".

Information services provided by cable would turn out to be far more important than the entertainment side, although entertainment would supply the finance for them.

"I think the non-entertainment services will cause a profound social and economic change."

In a speech to an Oyez conference Aldrich outlined ten major telecommunications services which were likely to be developed. These were teletext-type data; teleshopping; telebanking; telepublishing; reservation services; teledeliveries; telemail and tele messages; interactive education; gateways to other networks; and security services.

Another major hurdle to be jumped was telecommunications regulations.

Honeywell sheds 1,850 staff in US

by John Riley

HONEYWELL Information Systems is shedding 1,850 of its 18,000 US workforce because of a drop in order rates and lack of economic recovery in the second part of this year.

The announcement states that "the majority of the reductions (to be made by December 2) will be in staff and indirect support functions for all information systems operations.

"Some reductions will be made in field marketing and support at branch locations throughout the US resulting from the consolidation of certain middle management positons," the statement adds.

Reduction will be achieved by a combination of lay-offs, early retirement and transfers, and there will be compensation based on number of years of service and "outplacement" support.

The financial savings that these cuts will make have not yet been determined according to a company spokesman in Minneapolis, who said he had been given no information as to whether any of the cuts would be felt outside the US.

Brian Long, managing director of Honeywell Information Systems (UK) said, "This is a significant cut by Honeywell's standards, and is related to the US situation and continuing recession."

He emphasised that the announcement does not apply to the UK and added, "I estimate very good results for the UK. We have done very well and will certainly achieve our financial objectives this year, and anticipate staying on track."

The group's plans had been based on an economic recovery in the second half of this year, but this has not occurred. The third quarter figures released last month showed income up 35 per cent to $43.8 million compared to $32.4 million for the same period in 1981. However, US computer orders are down substantially.

Honeywell also announced last month that its operating earning per share excluding capital gains had fallen by over 20 per cent in the first three quarters of this year.

The "new era" claimed by Honeywell last month is having an inauspicious start. This claim was made at the launch of the new line of distributed processing systems, the DPS 88 Series, which comprise the DPS 88/81 single processor and the DPS 88/82 dual processor. These are respectively four and eight times more powerful than Honeywell's previous largest general purpose system, the DPS 8/70.

The new launch serves to emphasise Long's point that "it is not that Honeywell is unhealthy at the moment, but that the economic recession is hitting particularly hard."

ICL sets up Australian manufacturing plant

by William Scholes

ICL has started manufacture in Australia. In the next 12 months it intends to produce 500 video display units in a newly-opened manufacturing area adjoining the company's shipping and distribution warehouse in Mascot, Sydney.

ICL is looking to the Asia-Pacific region as a possible export market for the terminals.

Display units being manufactured are Modules 3484, 3485 and 3573 which are used with ICL's networked product line.

Stan Owens, chairman of ICL (Australia) opened the manufacturing area by completing the production of the first Australian-made terminal.

Neil Lamming, managing director of ICL Australia, said the refurbishment centre which opened in Mascot three years ago had encouraged the company to take the next step into manufacturing.

Sperry-Mitsubishi deal

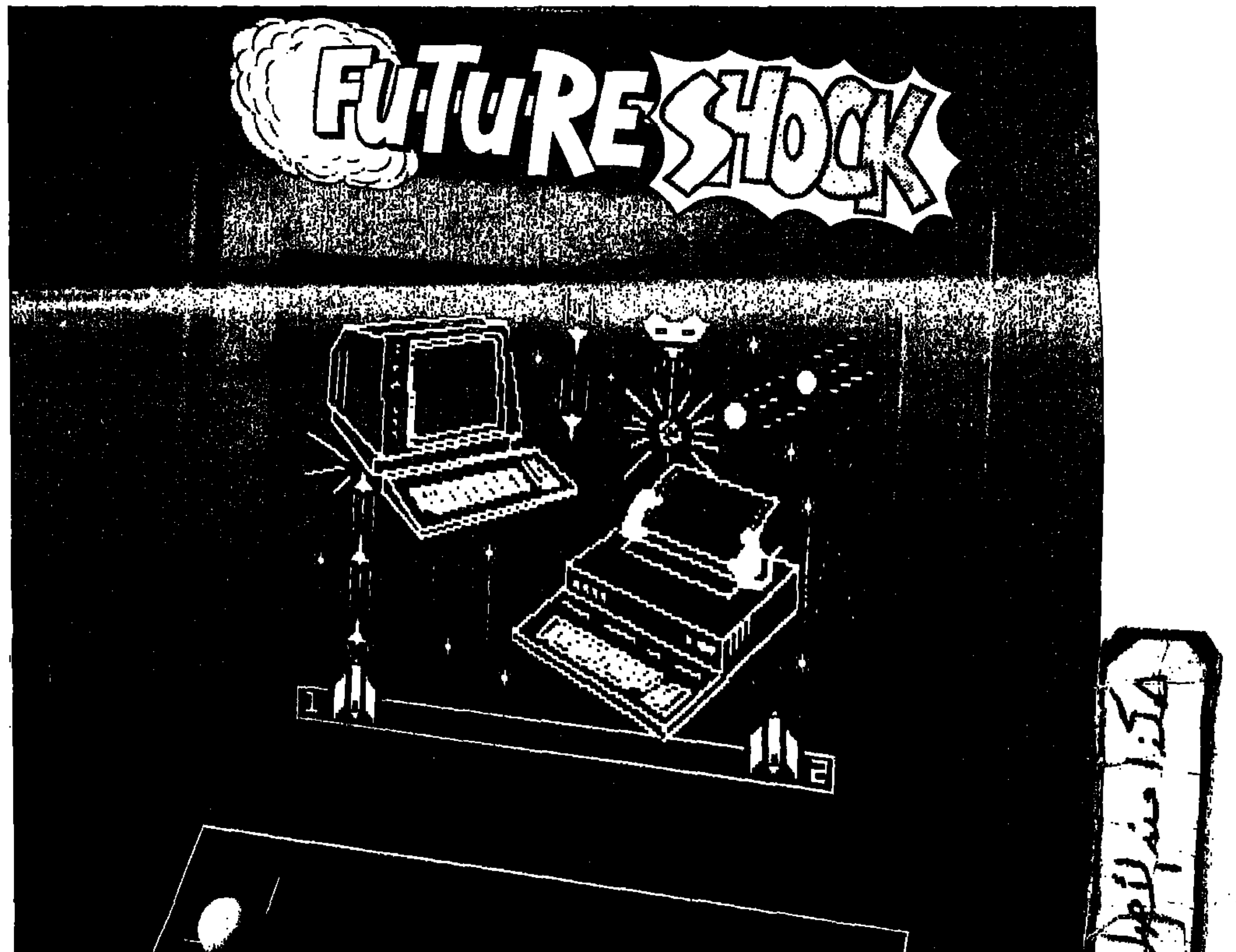
by George Black

MITSUBISHI of Tokyo will supply the central processing unit for Sperry Univac's System 80 Model 8 computer, but the peripherals and software will all be developed by Univac. The agreement springs from a five-year contract between the two companies made in June.

A Univac spokesman added that his firm was evaluating Mitsubishi's Multi-16 personal computer among a range of options, although no decisions had yet been taken.

Under the contract, it has already been approved that the Japanese side would deliver 64K RAM chips, but the volume and date of the transaction has not been fixed.

Mitsubishi is to support the marketing of Univac products.



NEWS ANALYSIS

Kevan Pearson reports on the UK computer industry's reaction to the Alvey Report and its recommendations

Thumbs up for Alvey— but no word from govt

THE computer industry has digested the recommendations of the Alvey Report – and, if initial soundings are right, it generally likes what it found.

Another interpretation, perhaps equally valid, is that it recognises the need to get something like a UK version of the Japanese fifth generation project off the ground as quickly as possible. And that its part in that exercise is to back Alvey, despite any reservations, so as to gain the maximum political support for the project. Then, once it is under way, the necessary changes can be made to align the project with what the industry feels it wants (if it can agree on that).

SUMNER . . . "We do not spend enough on R&D."

The consensus view is that Alvey is generally right, save for the obligatory quibblings about detail and emphasis. The most common responses have been to urge a re-emphasis on training, particularly computer science, and on conversion courses and retraining, and to stress the need for an active technology transfer to ensure that marketable products are the result.

Both points are made in the report, but in a rather low-key way, and definitely in the background compared to the consideration given to the four "enabling technologies" on which the research and development efforts would concentrate.

Mark Dowson, a director of Imperial College Software Technology, said: "I have almost no reservations in welcoming the report and I hope its recommendations will be implemented as soon as possible.

"I would, however, like a change of emphasis on training. There is a lot of emphasis on academic training and very little on in-service training to improve the skills of existing practitioners. There is a long lead time on academic training."

Dowson was joined in this view by Peter Thomas, marketing director of Pactel and president of the Computing Services Association. "More emphasis is needed on industrial training: the retraining of information technology professionals and others. Alvey's emphasis is more on computer science graduates: it takes years for someone to go through the system, and we need an early start."

The need for an early start has become a rallying call for all manner of people and organisations working in the industry – among them the National Computing Centre, the British Computer Society and the Computing Services Association.

They are also entirely behind the need to get marketable products out of the project, and as soon as possible. Doug Eyeions, general secretary of the CSA, said: "We believe that the main problem in the UK is marketing rather than technology. We would re-emphasise the need for technological transfer, to ensure the widest dissemination of ideas."

Some people think we might already be too late: "We should have started this programme five years ago," said David Rodway, technical director of software house SPL.

The major question at the moment is just how the government views the report's recommendations. Philip Hughes, chairman of Logica and a member of Alvey Committee has said that the has received no feedback on how the Department of Industry, and more importantly how the Treasury, the keeper of the DoI's purse-strings, view the report.

It is very much in the political guessing arena at the moment. Though few doubt that the project will get some money from the political paymasters, the question remains exactly what proportion of that asked for by the Committee, will actually come its way.

"It's a political football at the moment to fund new technology," said the CSA's Eyeions.

April 1983 could be the right moment for the government to say what it is doing."

Others think the section on funding is vague. Professor Frank Sumner, of Manchester University, said: "It seems that they plucked the figure out of the air; it's one of the problems of having to deal with the government. But only about £50 million of the total is properly worked out.

"We do not spend enough on R&D. IBM's Thomas J. Watson Research Labs spend more on R&D than the entire UK industry. I'd give the report every backing because of its attempt to get the government to accept that you don't compete in this area without organised R&D," he added.

The report has been before the government for over a month now, and so far there has been no word on its reception.

RODWAY . . . "We should have started this programme five years ago."

'A balanced debate'

Kevin Cahill comments: Among the criticisms of the Alvey Report is that it is politically naive.

Information Technology Minister Kenneth Baker is understood to have favoured a formal link with Japan on a fifth generation programme. That approach has been specifically rejected in favour of a UK-only programme of research and development, with possible collaboration later.

Baker is also thought to have made clear that if money was to be requested, the Alvey Report should show where it would come from, and not simply stick out its hand for a government-based funding effort.

Another argument put forward at a recent Pitcom (Parliamentary Information Technology Committee Meeting) is that Alvey has got it wrong in emphasising the Japanese threat. The government, it is suggested, set up the Alvey Committee in an effort to redress the massive dependence of the UK on imported American technology, which accounts for up to 80% of its technology needs. In contrast, the last quarter's computer and peripheral import figures show that Japan supplied just £2.5 million worth of equipment to the UK, against over £34 million from the US.

This argument was put to Philip Hughes, chairman of Logica and one of the authors of the report, who rejects the argument. He counters with the example of a Japanese company undercutting his own company by over 50% in a bid for a huge contract on the American West Coast.

On the question of funding and the implication that the government simply would not make that kind of money available, Hughes said that the Alvey Committee had simply recommended what it considered the minimum necessary to do the job, in the face of the kind of funding other governments were pouring into information technology research.

Hughes added that the had so far heard nothing from the government, the treasury or the DoI, the main funding agencies, in relation to the report. And a number of Pitcom members thought they detected a possible move to drop or rather ignore the report by government.

Another criticism of the report is its failure to address the question of computer architecture. That has been the main focus of the Japanese fifth generation report. Without a revolution in the way computers are built, the Japanese planners seem convinced that the fast non-Von Neumann processors needed to drive the 10,000 million instructions per second machines they want will not be available.

Hughes responds to this by saying the committee spent quite some time considering architecture. "It was," he said, "a balanced debate."

'Jobs in DP threatened by generators'

by George Black

CAREER prospects in data processing could be drastically reduced with the advent of systems generators.

The systems planning manager for the Ford Motor Company in Australia and satisfied user, Kevin McNamara, said in London that he anticipated far fewer jobs in the industry as a result of concepts like the Burroughs Linc, which his firm has successfully introduced this year.

"Generators should start to make an impact in the next few years as people learn from our experience," he said.

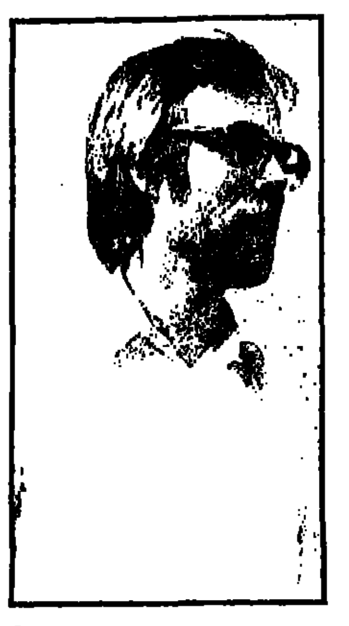
But in the short term he also prophesied much greater job satisfaction for people working with the new methods than doing traditional programming.

Linc, the logic and information network compiler brought out by Burroughs late last year, had produced a system which would have taken six man months, in only 80 working hours, he claimed.

"We were working to outlandishly optimistic deadlines and ended only two weeks and three days late. And all of that time could be attributed to training, disc problems or the unfavourable environment."

The pilot project took place in Taiwan and involved an inventory control system.

On small systems both testing and checking had been easy and response times were satisfactory. Portability was already proven. For larger systems, on which they were still testing the product, they were "virtually on target" using only half the number of staff usually needed.



OAKES . . . Looking for distributors in the US.

Pro Pascal to run on DEC machines

by George Black

THE Pro Pascal compiler designed by London software house Prospero, is to be made available on DEC micros after an agreement between the two companies this week.

Mike Oakes, one of the Prospero directors, said: "We hope the DEC contract will soon lead to a lot of others."

Prospero had been talking to two other manufacturers, one in the UK and the other in the US.

"We are actively seeking distributors in the US," he said, but added that they had found difficulties in negotiating over such a distance, as had other British software firms. The compiler had gained over 300 users in this country in one year.

The five-year deal gives DEC worldwide marketing rights for Pro Pascal on its micros. The compiler is to go into the DEC classified software directory and will run on the Robin, Rainbow and Decmate 11.

Prospero's specialists Oakes and Tony Hetherington have produced compilers for Coral 66, Fortran and Cobol for a range of machines. The firm was set up as recently as September 1981.

"We think the DEC agreement is a big step forward because DEC is likely to be in the IBM league in a year or so," said Oakes.

Pamacs available in UK

A GENERAL ledger and financial reporting package developed in Sweden by PA Computings and Telecommunications is being introduced in this country. Pamacs was designed by a team of accountants for IBM's System 38.

"Our Swedish company had the 38 hardware first so the project was developed there," said Peter Andell, Pactel's senior consultant. The package had been well received by Swedish business and was therefore to be transferred to the offices in Norway, Finland and the UK – with plans for France and Germany next year.

Engineer's draughting system gets personal

by George Black

THINGS seem to be warming up for Drafty, a 2D draughting system which is the brainchild of Camberley software house Norrie Hill. The two-year-old company has scaled down its CAD ideas from the Hewlett-Packard 9836 and 9845 so that they can now be used on the smaller desk-top HP86.

Sales manager Phil Reakes calls it "the engineer's personal CAD system" which will be of interest primarily to educational establishments where speed is not of the essence.

It will also handle smaller drawings for engineering organisations. Norrie Hill will be appointing dealers to sell and support the new product, which is compatible with its Sorce-45 and Sorce-36 systems.

Ask for VAX

A TURNKEY manufacturing and financial software system, known as the Manman, is now supplied for the DEC VAX series as well as for the HP 3000s. The developer is Ask Computer Systems of California, which made the announcement at a trade show in Chicago.

NCA sets up in Britain

by Phillip Hunter

KEENER competition in the market for manufacturing control software can be expected from the US firm NCA, following the establishment of a UK office. The $12 million California-based corporation is currently looking for a UK manager.

NCA's main product, responsible for 55% of turnover, is the Maxcim manufacturing and financial software package, which is already sold in the UK through existing dealers. Clients include Plessey, Digital Equipment and Apple, which use the product in-house.

Maxcim was developed on the DEC PDP-11 range of minicomputers, but is now implemented mostly on the more powerful and versatile VAX range. It consists of 700 programs operating from a common database of financial and product information to enable on-line control of production lines.

NCA plans to extend Maxcim to other hardware next year. It has nearly finished testing on the so-called super-microcomputers made by Plexus Computers in California.

Apart from Maxcim, NCA sells a system to check the design of VLSI semiconductors from engineer's drawings before manufacturing begins.

This includes a rule check, to verify that the final circuit conforms to the designer's layout rules, and a network comparison check, to make sure that the final circuit does what was originally intended.

NCA was set up in 1969 in the custom software market, but soon saw the advantage of proprietary systems sold to a wider variety of clients. In 1975, NCA adopted the PDP-11 to build Maxcim, and promptly accelerated to a 50% annual growth rate.

Import tax on software?

by John Riley

SOFTWARE could become liable for import and export duty in Switzerland, according to an article in last week's German computer newspaper Computerwoche. The report, entitled "Thoughts are now no longer exempt from customs duty", considers that this could be the outcome of a reorganisation of the Swiss Customs system from a weight to a value tariff.

The whole question has been under discussion by a working party to the Swiss Federal Council and its findings are expected to be made public soon.

If a change to a value system is agreed, Computerwoche anticipates difficulty in valuing software.

Computerwoche also considers that there would be a distinction between systems and applications programs, with systems programs, being an integral part of a computer, having a lower Customs value than applications programs, at least for duty purposes.

Breakthrough

THE first portable microcomputer Cobol compiler to support the Japanese industry standard (JIS) Kanyi character set has been developed by London-based Micro Focus. The makers say it represents a significant breakthrough into a market hitherto monopolised by Japan's own specialists.

UK firm in pact with DG

BRITISH flair for software has led to a major pact with Data General in Westboro, Massachusetts. The London software house Fraser Williams has developed a new word processing product for DG's commercial systems.

Fraser Williams has modified its Phraser general-purpose system to match DG's own Busigen and Busipen packages for the Nova and Eclipse. DG will have sole rights under the licence to sell the new product, called Busitext.

Unix deal

ROOT Computers has concluded a deal with UniSoft of Berkeley, California, to port the Unix System 3 operating system to micros based on the Motorola 68000 chip.

Days of the Apple-type micro are numbered

COMPUTERS as we know them are going to disappear. In itself that is not such a surprising statement, except that its author, chief scientist at Atari, Alan Kay, reckons it will happen in the next three to eight years.

He talks predominantly of home computers, an area where machines are still akin to the Apple II micros that started off the whole personel computer boom in 1976. Atari itself is in the same keyboard/screen/CPU box-type machine with its 400 and 800 computers.

But the days of such machines are numbered, according to Kay. There will be a transition from physical vehicles to informational ones. Eventually they will disappear from view, becoming part of the furniture like paper and pencil, the telephone or the television – noticeable only when absent. And if they don't change they will disappear into cupboards, too complex to apply to problems adults want solving.

Kay is wary of making specific predictions, preferring to point towards general directions in machine technology, and highlight aspects of people's behaviour that bear on the nature of these new machines.

But he does bemoan the dependence on keyboards and the lack of a really good pointing device. "That's what is lacking on most personal computers today, and it's about as optional as the letter 'E' key," he says.

"People have always been 'communications junkies,' taking in much more information than they give out," says Kay. New methods of communication have been eagerly adopted, even when more expensive than what is displaced, he claims.

One firm pronouncement he is prepared to make is on the certainty of networks, envisaging high bandwidth nets for local access, cellular radio when further afield.

Fantasy is another strong force he sees in people, with a need to enter simpler, safer, more controllable – but still exciting – worlds. Video games provide one way of achieving this, he reckons, so are more than a passing fad, as they appeal to deep human needs.

To get a glimpse of Kay's computers of the future, it is best to follow his thesis that it takes 10 years for successful laboratory experiments to move to the commercial world.

Examples are the first video game, developed at MIT in the early 1960s and moving into arcades in the early 1970s. The first laboratory personal computer appeared in 1965, the first consumer one in 1975.

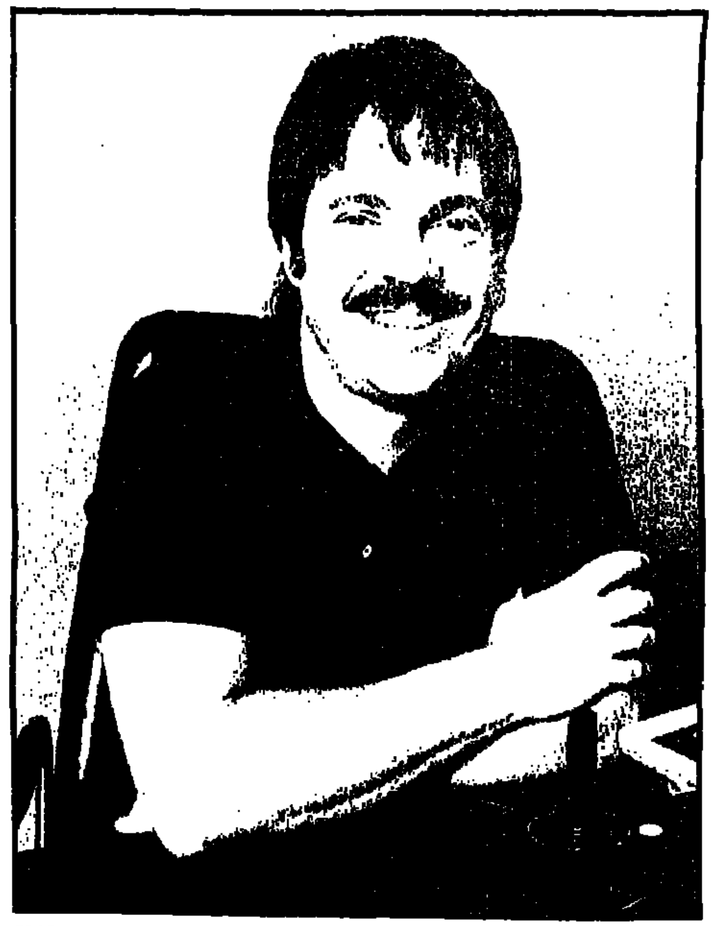
Looking at the lab successes during 1975 to 1980 should give good ideas of what will show up in the late 1980s.

Kay cites two examples of systems developed at MIT in the mid-1970s. The first consolidated all a home's information resources into a soft resource. Photo albums, desk, telephone, and much else disappeared into the wiring of the house itself.

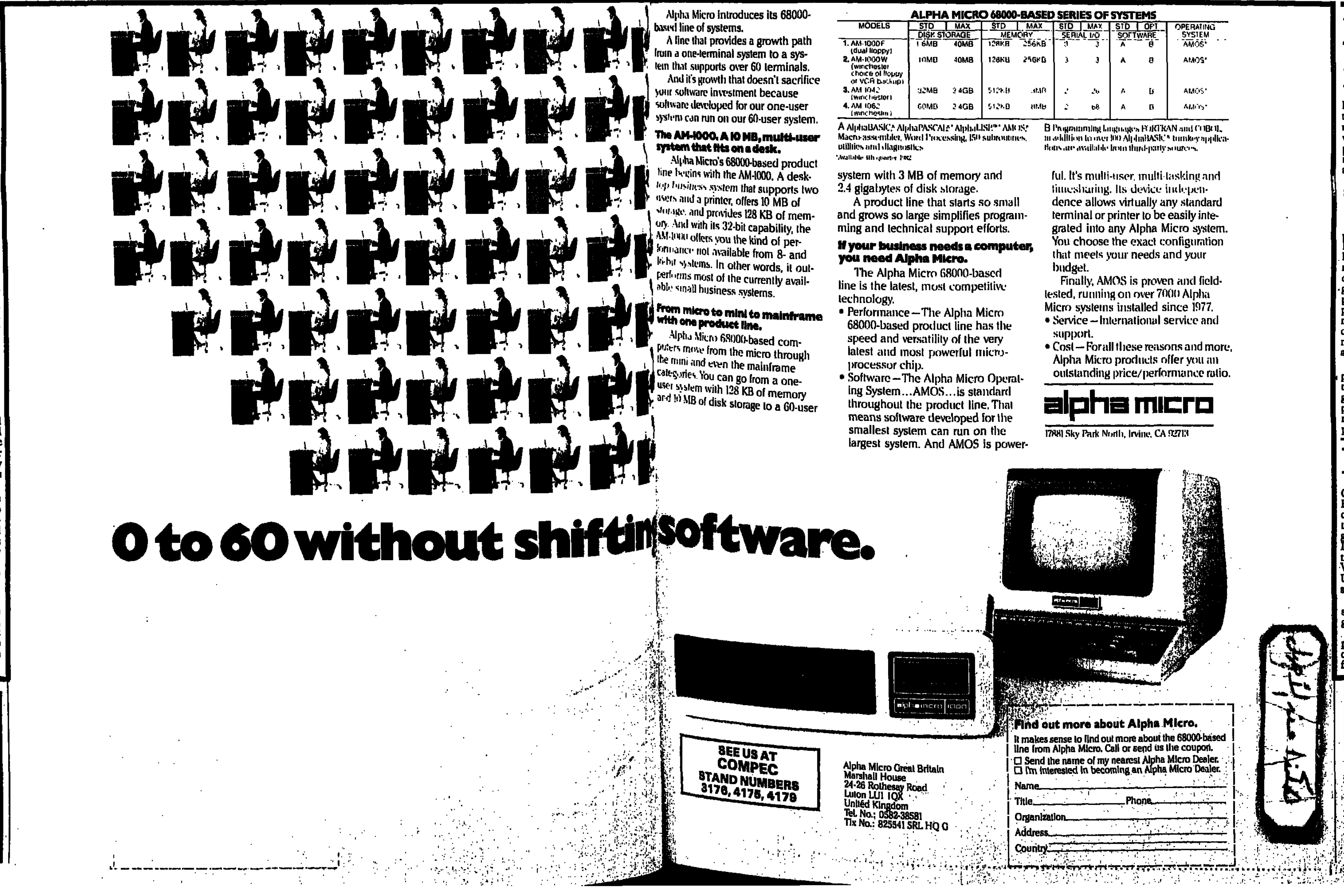
They were no longer objects, but services to be used through touch-sensitive screens, moving cursor and speech recognition.

The second MIT system was even softer. It was controlled only by speech and gesture, with no physical touch needed. The speech recognition was only 60% efficient, but never required the user to remember what had been said before recognition failed. It formulated a new question from what it had recognised.

"It resembled a friendly, if slightly deaf, butler," says Kay.



KAY . . . 10 years for lab successes to reach the commercial world.



ALPHA MICRO 68000-BASED SERIES OF SYSTEMS

MODELS	DISK STORAGE STD	DISK STORAGE MAX	MEMORY STD	MEMORY MAX	SERIAL I/O STD	SERIAL I/O MAX	SOFTWARE STD	SOFTWARE OPT	OPERATING SYSTEM
1. AM-1000F (dual floppy)	1.6MB	40MB	128KB	256KB	3	3	A	B	AMOS*
2. AM-1000W (winchester choice of floppy or VCR backup)	10MB	40MB	128KB	256KB	3	3	A	B	AMOS*
3. AM 1042 (winchester)	32MB	2.4GB	512KB	4MB	2	26	A	B	AMOS*
4. AM 1062 (winchester)	60MB	2.4GB	512KB	8MB	2	68	A	B	AMOS*

A AlphaBASIC,* AlphaPASCAL,* AlphaLISP,** AMOS,* Macro-assembler, Word Processing, 150 subroutines, utilities and diagnostics

B Programming languages FORTRAN and COBOL, in addition to over 100 AlphaBASIC* turnkey applications are available from third-party sources.

*Available 4th quarter 1982

20m personals installed by 1986

DESKTOP and personal computer shipments in the US will top mainframe shipments in dollar value by 1986. By then 20 million personal computers will be installed worldwide, representing an installed base of over $67 billion – a 58% annual compound growth rate over the present $6.8 billion for installed personal/desktop machines.

This growth, predicted in a report from market research firm International Data Corporation*, has far-reaching implications for management information services departments within large user organisations. The proliferation of personal computers means firm plans must be made by management information systems (MIS) departments to cope with the multi-million dollar acquisition and support decisions, says IDC.

"If left to itself, the growth and proliferation of personal computers could well become an unimaginable nightmare for the MIS department," says IDC's senior research analyst for the desk-top/personal computer market, Aaron Goldberg.

"Most organisations have not yet developed a firm plan for personal computer usage. However the time is ripe if the MIS department wants to handle the problem before the installed population makes attempts at control impossible."

A growth in worldwide shipments for small business computers – roughly equivalent to IDC's desktop/personal computers – is forecast by another US consultancy, Venture Development Corporation**. But it reckons the effective growth rate will only be 22.6% a year, taking shipments by US vendors from $3.5 billion of 1981 to $9.96 billion by 1986.

The VDC report concerns itself mostly with distribution channels for the machines, noting as ever that success in the market will depend on more than hardware.

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* Personal/desk-top Computer Use in Large Organisations. International Data Corporation, 5 Speen Street, Framingham, MA 01701.

** Small Business Computer Sales and Distribution: a strategic analysis. Venture Development Corporation, 1 Washington Street, Wellesly, MA 02181.

Image boost for APL

ONE of its users is to market British consultancy Inner Product's microcomputer implementation of the programming language APL. Beresford Information Technology, much taken with Inner Product's VIZ::APL, has acquired the sole UK distribution rights and will be selling the product to dealers.

Inner Product itself will handle specialist end users needing greater support.

"APL has never been properly promoted," says VIZ::APL product marketing manager at Beresford, Patrick McVeigh. "It should flourish on micros." He reckons his early task as setting up an awareness campaign to get APL seen not so much as a boffin's language, but as one people would like to have.

Inner Product's managing director Dominic Murphy agrees with this view. "The first aim is to change attitudes, and carve out a chunk of market for what is a better language than Basic".

Murphy reckons the APL market is still small, but nicely placed. The majority of users are in large companies, like banks, ICI, BP ("all the big household names," says Murphy).

The main users are for management informations systems. The first market for the microcomputer version will be among these companies already running APL on mainframes.

VIZ::APL is completely standard, claims Murphy. It allows Z80-based micros to run mainframe APL code directly, if slowly. Also, being CP/M based, it can read any CP/M file and act as a kind of glue between different applications.

Micro News is compiled by Robert Parry

SDL stock goes public

IN A week which will see three computer companies reveal their plans for a public listing on the Stock Exchange, Camberley-based Systems Designers took the plunge and was first off the mark, to follow NMW and Memory.

The company, founded 14 years ago, is offering 1,427,600 shares at £2.10p each. Over one million of the shares are being offered by existing shareholders, who will collect the proceeds themselves. After the huge listing expense of £225,000, Systems Designers International will receive £525,000 which will be used to provide additional working capital and to finance further expansion and developments.

The principal trading subsidiary of Systems Designers International is Systems Designers Ltd, founded in 1969 by current chairman and managing director Philip Swinstead.

The company began life as a minicomputer software supplier to the Ministry of Defence. By 1974 it had become a recognised contractor to the MoD and was one of the first software houses to be registered as meeting the military's strict standards.

The MoD still accounts for much of SDL's turnover, over 40% of which comes from government contracts.

Until 1977, SDL was primarily a defence contractor, but that year the company decided to widen its horizons.

The first new area SDL chose was the viewdata, (now Prestel) service being pioneered by the Post Office.

With the aid of a substantial National Enterprise Board loan, and an equity investment which gave the NEB a 26% holding in the company, SDL became one of the major software houses involved in viewdata, both in UK and internationally.

Swinstead says that this is still benefiting the company, which is developing in the US where the viewdata market is about to take off. That view, incidentally, is not shared by ICL's Robb Wilmot, who recently told an audience that he had an open mind on the potential for viewdata in the US.

The following year, with the NEB money tucked under the belt, Systems Production Ltd came into being.


SWINSTEAD . . . Viewdata marker is about to take off in the US..

SPL, now independent and separate company as the result of a demerger in June this year, was originally set up to complement SDL by developing a range of specialised microprocessor equipment.

According to Swinstead, the reason for the demerger was a potential conflict of interest between the two companies and a substantial difference in management and operating requirements between the two groups.

In 1981, the NEB stake was sold to two private institutions by the Edinburgh based Investment company Ivory and Sime, which retains a board member with SDL.

In the past, SDL was involved in developing hardware and software for the British Army's Bruin management information system.

Japanese electronics giants confident the boom will continue

THE boom in Japan, at least for electronics companies, seems to be continuing unabated.

Apart from what is now seen as a major setback caused by a fire at the Oki semiconductor plant, Fujitsu, NEC, Mitsubishi and Hitachi are all reporting or forecasting improved profits.

The half-year profits from Fujitsu released last week show an advance on the same period last year of 49.3% to $107 million (29.4 billion yen). Total sales rose to over 400 billion yen, leading the company to revise both its sales and profit forecasts for the year.

Fujitsu is now reckoning on full year sales of 810 billion yen, with profits of 63 billion yen, a 25% advance on the earlier forecast.

The company has attributed much of the improvement to a substantial increase in deliveries of computers to Amdahl Corp of the US and Siemens of Germany.

Telecommunications sales rose by 19.7% to account for 18% of the company's overall sales for the six months.

Information equipment as a whole rose to 66% of Fujitsu's turnover.

Nippon Electric, which reported higher than anticipated demand for 64K RAM chips, also saw a profit rise of 16.4% for the first half ended September 30.

According to the company, overseas sales rose 140% on the same period last year, with computers, particularly medium-sized machines, doing unexpectedly well. NEC already has turnover of $100 million in the US, and much of the gain was probably in sales to that country.

In the UK and Europe the company is conducting a vigorous campaign to promote both its printer products and its PC 8000 micro, which is Japan's top-selling personal and small business computer.

The company is now forecasting a 52 billion yen profit for the year, a rise of 19% on last year's figure.

Despite the problems in the US where the FBI and IBM have filed charges against the companies, Hitachi and Mitsubishi report sales up 11% and seven per cent respectively.

Both companies report increased overseas sales, while IBM Japan is understood to have lost a "substantial" number of orders following the attack on the two companies.

Sales at Hitachi for the half-year came to $4.2 billion and Mitsubishi rose to 67.7 billion yen.

Oki has revised profit forecasts 25% down as a result of the fire.

Memory 'for listing'

IRISH firm Memory Computers Ltd, until recently called Memory Ireland, is understood to be in the final stages of negotiations with brokers Simon and Coates for a UK Stock Exchange listing.

The company, which has substantial interests in the UK and is hoping to expand here, has turnover of about £8.5 million and is owned 67% by two investment trusts, Avenue Investments and Waterford Glass. The remainder of the shares are owned by the founders Patrick Pearse Mee and Aidan McKenna.

Memory is also involved in talks with ATV of the US.

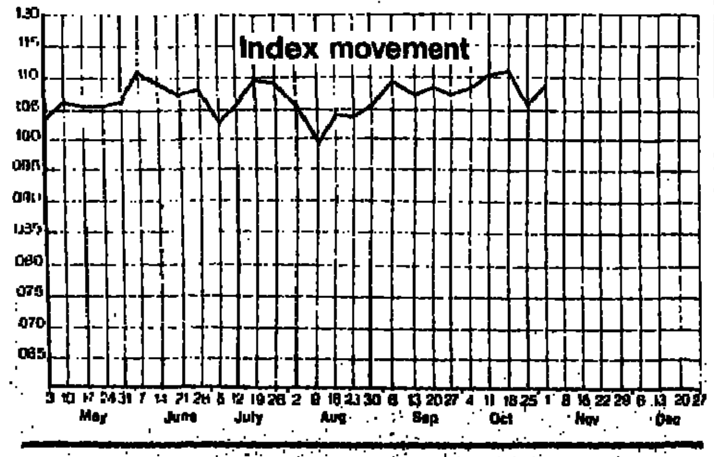
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date 2/11/82 Index 108.55 Change 2.84

Pence 1982 High	Low	London Stock Exchange Stock	Pence Price	C'nge	$ 1982 High	Low	US Stock	$ Price	C'nge
230	181	ACT (App Com) (25p)	227	- 1	30	18	Amdahl	29	+ 1¼
199	150	BOC Int (25p)	181	+ 1	26¼	11¼	Apple Inc	25½	+ ½
39	18	B Bev Kem (25p)	39	+ 2	29½	21	Auto Data Pro	28½	- 1
137	101	Chubb (20p)	109	+ 1	46¾	30½	Burroughs	46¾	+ 2½
90	48	Cole Group (25p)	90	+ 4	15½	7¼	Comp Auto	15½	+ ½
303	180	C.A.S.E. (20p)	180	- 8	17¼	11¼	Comp Sciences	17¼	+ ¼
730	448	De La Rue (25p)	465	+17	18½	9½	Comshare	10¾	+ ¼
350	235	Extel (25p)	287	- 1	38	22	Control Data	38	+ ¾
494	317½	Ferranti (50p)	457	+20	39	21½	Cray Research	38¼	- 2¾
249	153½	GEC (25p)	244	+14	63¼	20¾	Data General	37½	- ½
76	33	ICL (25p)	74	+ 4	49½	11¼	Datapoint	18¼	- 2
47	35	Kalamazoo (10p)	35	- 1	30	16¼	Dataproducts	30	+ ½
316	273	Kode Int (25p)	316	-	96½	62¼	Digital Equip	92¾	+ 2
315	215	Memec (10p)	288	- 5	43¼	19¾	Elec Data Sys	40½	- ¾
192	110	Muirhead (25p)	187	- 3	6½	3½	Gen Automation	6	- ¼
306	218	N'market (1981) ($.06)	302	- 3	38¾	22	Harris	36	+ 1
820	670	Norsk Data	665	- 5	65	38¾	Hewlett-Packard	63¾	+ 1⅜
470	285	Office & Elect (25p)	300	-	93¼	61½	Honeywell	93¼	+ 1½
607	445	Philips Lamp (f10)	607	+ 7	38¾	20¾	Intel	36¾	- 1½
637	348	Plessey (50p)	600	+23	83¾	67	IBM	81½	+ 2
87	20	Quest Auto (10p)	37	+ 2	66	38¼	Litton Ind	62½	- ¼
605	363	Racal Elect (25p)	600	+38	17	9¼	MDS (Mohawk D)	17	+ 1⅛
283	171	Rediffusion (25p)	278	+ 3	38½	18	MSA (Mgmnt Sci)	38½	+ 2½
455	390	Thorn-EMI (25p)	425	+17	18¼	7¾	Mngmnt Assist	12¾	-
93	74	UC&T (50p)	86	- 1	11¼	6¾	Modular	11¼	-
					85½	60¾	Motorola	85½	+ 3¼
					24½	14	National Semi	22½	- ¾
		OTHER MARKETS*			82¾	40½	NCR	82¾	+ 1½
					28½	17¼	Perkin-Elmer	28½	+ 2
80	62	Bus Comp (10p)	65	-	33¼	18¼	Prime	32¼	+ 1
205	78	Consult (C&F) (10p)	198	-	49½	29¾	Raytheon	45	- ½
190	160	Int'europa Tech (20p)	188	- 2	28¼	14	Signal	22	+ ½
262	245	Io Tech (25p)	250	-	34	21	Sperry Corp	27½	+ ½
60	47	Knight (5p)	47	- 2	34½	18½	Storage Tech	20¼	+ ¼
189	112	Miles 33 (10p)	140	-	30½	15¼	Tandem	30½	+ ½
170	85	NMW (£1)	134	+ 2	43	23¾	Tandy	42¾	+ 1¾
128	43	Rolfe & Nolan (10p)	128	+13	118¾	70¾	Texas Inst	118¾	+ 3
120	78	ScanData (10p)	90	-	27¼	12½	Tymshare	18¾	- 3¾
258	180	Star Comp (10p)	248	- 6	49	25½	Wang Lab B	49	+ ½
105	80	Trident Comp (10p)	85	-	12¼	7½	Wyly	12	- ¼
112	78	Zygal Dyn (5p)	88	-					

The table shows the closing prices on Monday The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.
**Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).*



Cray third quarter profits slip

THE now much-imitated Cray Corporation has announced third quarter results which show big slippage in both revenues and profits.

Sales for the quarter were $24.2 million compared with $28 million for the same period last year.

Profits fell from $5.4 million to $643,000 for the quarter.

For the nine months ended September 30 the company had sales of $78.4 million, a substantial upturn on last year's nine-month sales of $61.6 million. Profits for the six months were $6.8 million compared with $10.1 million for the same period last year.

In his comments on the results company president John Rollwagen, said the figures had been affected by the fact that of the four new systems recently installed, only one had been an outright sale, the remainder being leased.

Cray, which builds huge scientific computers costing between $5 and $10 million each, is particularly vulnerable to the lease sales mix in deliveries, and earlier optimism among New York analysts that the company would increase the outright sales component of deliveries does not appear to have been justified.


ROLLWAGEN . . . Leased sales adversely affecting Cray's finances.

The company is facing increasing competition from the Japanese, with both Fujitsu and Hitachi announcing machines similar to the Cray products, although neither company is likely to be shipping the processors before 1984/85.

Cray's only serious competitor at the moment is CDC in the US, but even the remote appearance of the Japanese is a threat which the company is not taking lightly.

Cray recently introduced a new intermediate range model, and development work on the next Cray supercomputer, with an estimated processing speed of between 600 and 1,000 mips, is going ahead.

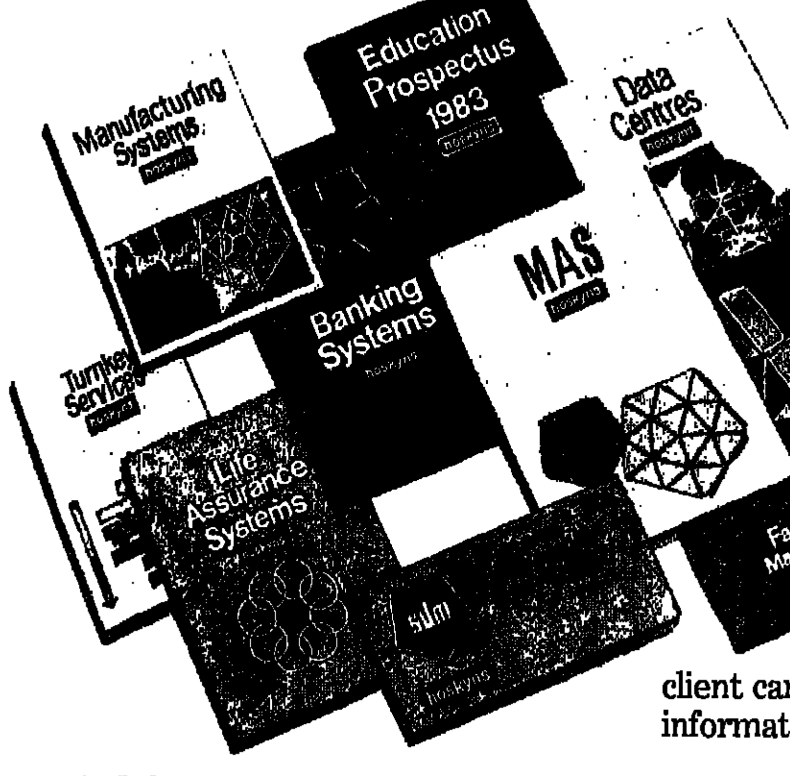
US 'walking dictionary' sets up 32-bit mini firm

FOR those who recall the engaging characters in Tracy Kidder's account of the creation of the Data General Eclipse computer, immortalised in the book The Soul of a New Machine, news has reached us of one of them.

Ed Wallach, the architect for what was then called project Eagle, and who was described by the project manager as "a walking dictionary and encyclopedia of computers", has set up on his own in Richardson, Texas, with the aid of $5.5 million in venture capital.

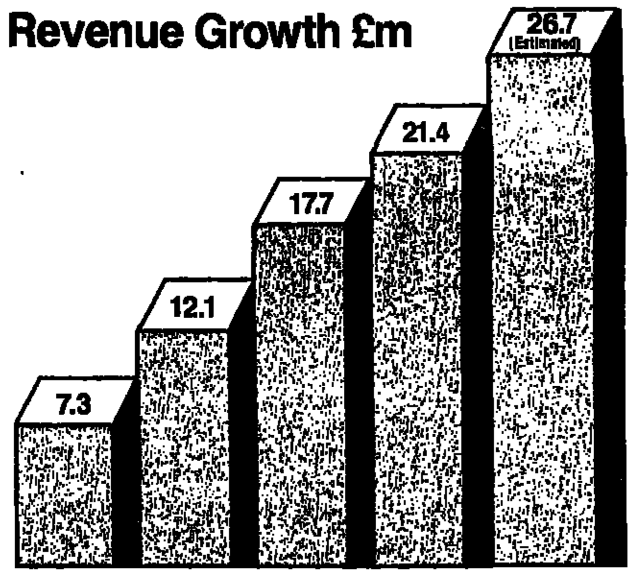
According to Wallach his new company, which currently employs 15 people, will build an ultra-high performance 32-bit minicomputer aimed at the scientific market place.

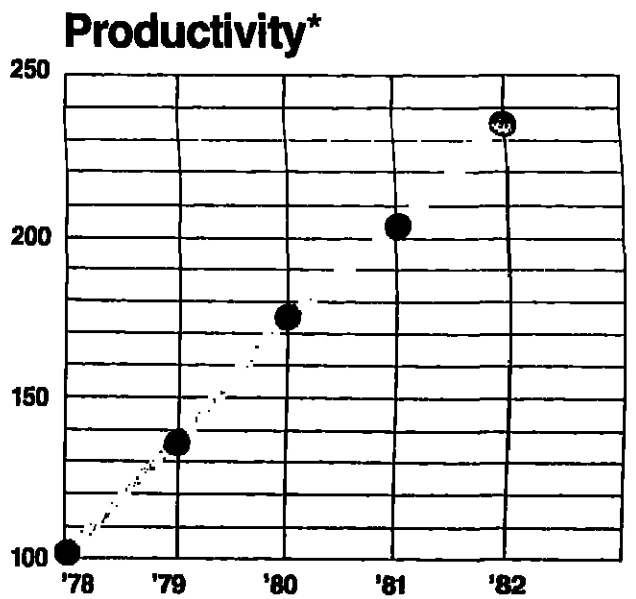
Company News is compiled by Kevin Cahill



Hoskyns Modular Application Systems

Industrial, Financial and Commercial Sectors	MAS I	MAS II	MAS H	MAS E	MAS M	KIBS	Special Standard Systems
Accountants	✓		✓		✓		✓
Banking	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Commodities							✓
Distribution	✓	✓	✓	✓	✓		
Financial Control	✓		✓	✓	✓	✓	✓
Foundries							✓
General Business Systems							✓
Hotels							✓
Insurance	✓		✓		✓		✓
Insurance Broking							✓
Leasing and Hire Purchase					✓		
Manufacturing	✓	✓	✓	✓	✓		
Retailing	✓		✓		✓		✓
Shipping	✓		✓		✓		
Solicitors							✓
Stockbroking							✓
Vehicle Contract Hire and Fleet Control	✓		✓		✓		✓





*Revenue per Hoskyns employee – 1978 = 100

PROFILE

The house where DP takes a back seat to business expertise

MANY small businesses have had their fingers burnt in the rush to computerise. While genuine fly-by-night computer suppliers are not as commonplace as the cynics would have us believe, there is still an alarming number of high-street dealers whose main aim in life is offloading systems to customers as quickly and with as little effort as possible.

So it is no surprise that many first-time users find out the hard way that the hardware and packages which sounded so attractive in the brochures don't *quite* perform as they had expected.

But at least one man decided to do things a little differently. David Jarman decided in 1979 to set up a turnkey business supplying to small businesses complete systems based on Apple hardware. Jarman realised that the software available off-the-shelf for the small user was not of the highest quality, so he took a new approach.

Rather than plunging straight into coding his packages Jarman, whose previous experience was mainly in the area of systems design with Plessey, Honeywell and Microsense, decided to take on board people from industry and commerce who possessed not computing expertise, but an in-depth knowledge of the actual workings of small businesses.

Jarman's plan was that the collective experience of his team would form a blueprint for software covering the principal business needs of the small businessman, such as accounting, stock control and financial planning. An advisory panel was formed, comprising accountants, consultants and company executives to provide the answers to the problems involved in producing computer systems which could actually meet the requirements of the customers.

Each program design is submitted to the advisory panel for appraisal, and based on its recommendations, the software is refined and simplified to make it both efficient and easy to operate by non-computer staff.

Jarman is a great advocate of Pascal and maintains that the language is streets ahead in terms of efficiency of Cobol or Basic when it comes to applications written for microcomputers.

He also claims that Tring-based Jarman Systems was the first company in the UK to produce commercial packages using Pascal.

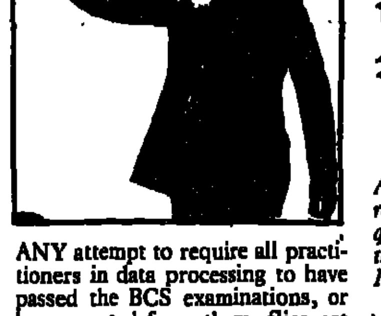
Jarman's two main advisors are board members Harold Norcross and Eddie McAllister. Norcross in a 66-year-old management consultant and both he and McAllister are Fellows of the Institute of Cost & Management Accountants.

Jarman deals through a network of 48 distributors. One exception to this rule occurred earlier this year when Jarman provided computing facilities at the prestigious Tring Donkey Derby. Despite having control of the betting, the Jarman-sponsored donkey, 'Number Cruncher', was beaten in the final.

But the company's success has been rather better in terms of turnover. Since going public in 1980, turnover has increased threefold. And with over 1,000 systems currently installed, Jarman expects is looking towards a £1 million turnover by the end of next year.

JARMAN . . . A day at the races.

PLATFORM



We can't become professionals just by passing exams

At the silver jubilee dinner of the British Computer Society, in October, it was reported that a vice-president proposed eventual legal recognition for its qualifications which would place severe limitations on those who had not passed their examinations, or been exempted. Ted Cluff, secretary-general of the Institute of Data Processing Management, takes up the challenge.

ANY attempt to require all practitioners in data processing to have passed the BCS examinations, or be exempted from them, flies not only in the face of reason and recent history; it is offensive, to say the least, to all those who competently practise their skills from day-to-day without being members of any so-called professional body.

In the US, the attempts over several years by the Association of Certified Practitioners to force, by means of legislation, a closed shop on the industry, have come to nothing. Apart from those in the American DPMA, the ACM and several other bodies, many remain outside the industry organisations in spite of the Americans being great joiners.

And so it should be. People must be free to practise their skills without being required to join a restrictive body.

This is not to say that we should not recognise the need to establish registers for those allowed to practise law or medicine. Even these do not prevent us from practising self-medication or having recourse to the herbalist or from defending ourselves in a court of law.

But there is no comparison between such old professions and data processing. I have been on many debating platforms over the last 15 years where I have argued that it is rather pretentious to describe ourselves as operating in a profession at all. We certainly lack a number of the attributes of recognised professionals.

What is certain is that membership of an industry body, whether it be the BCS or IDPM does not *per se* bestow the title of professional. Being a professional relates very much to our own competence and integrity and to how others see these qualities in us. These qualities are not in any way limited to those who have taken particular examinations or who pay their subscriptions to a particular industry body.

Based on the numbers employed in the industry, it is almost certain that the non-members of any industry body who can pass my test of professionalism exceed those who have joined the BCS or IDPM.

The issues are quite simple. Some people see the need to take a degree in computer science. Many such people find it difficult when their studies are completed to obtain jobs, particularly in commercial installations, because they are both over-qualified and under-trained in certain key areas. According to many reports which, are sufficient to know they are representative, such applicants often go to the back of the queue.

This means that different jobs require different levels of skills and it can be wasteful to train everybody to a much higher level if the excess education is never to be used, providing, of course, that access to the higher levels continues to be available to those who choose to participate.

Who says that the 42-week Threshold course is inadequate? That the 26-week Tops course is not enough? The one-year ONC/OND? The two-year full-time IDPM course which equates to HNC/HND? To each his own.

Many software houses call for higher qualifications than required in most commercial installations. Polytechnics and universities may for teaching purposes require higher levels than software houses. Who can argue with this?

The references so far have been to people who work in, or who want to work in, data processing. Are we to say that those who have already been in the industry for 15 to 20 years are unsuitable to follow their chosen "profession" because they came into the industry by accident, as many of us did? When computers became available in 1956, I had already been in punched card data processing for seven years, but I was not allowed entry into the holy land of computers because I did not have the required PhD, or Hons degree in maths and a beard.

We have moved on a little since then and we know that the technology of computers with an understanding of AND gates and bootstrapping compilers is not exactly what we all need to make a contribution to the economy of this country. What we do need is to understand how to apply the technology to business, in particular in order to contribute to profit-making and competitiveness. This requires an understanding of how business functions, what makes it tick, how to get the managing director to listen to a thoroughly thought-out plan to invest in office automation.

For all this, do we need to pass the BCS examinations?

To listen to proposals to establish a closed shop in DP virtually ignores the obvious, that users are not well placed to do their own thing in many areas. James Martin — and I rarely argue with him — says that by the end of this decade users will be able to provide for their own needs for 50 per cent of the time.

But, and this is the key question, if a competent user is professionally qualified in his own area, sits down beside a man who may or may not have taken the BCS examinations, "who then is the gentleman".

The greatest contribution that we in DP can make to the economic well-being of this country is to examine thoroughly how best we can work with our users to mutual advantage, and one way is not to claim some special role for ourselves which allocates some inferior status to others. Instead let us recognise that we each have a contribution to make.

Ted Cluff

DOWNTIME

Talking to teapots

IN mankind's great search for the perfect cup of tea stands one almost insurmountable problem — the vending machine. For years these mechanical monstrosities have been replacing the traditional British tea lady and serving warm fluids which purport to be tea, coffee, chocolate, soup, or orange.

More often than not, the concoction delivered tastes like a blend of all the available selections, diluted with dishwater.

Recent research has shown that in the case of machine-brewed tea, the root of the problem lies in the time required for the machine actually to brew the stuff before serving it. People have been known to kick recalcitrant Vendomats and Gungemasters should they fail to deliver the goods fast enough.

But no matter what the researchers at Klix-Four, a division of Mars, tried, they could find no way of speeding the process, and turned to the microchip for help.

The new generation of vending machines will, much as it pains me to have to tell you, be capable of speech with the aim of keeping the customer informed of what they are doing. It is hoped that the client will be engaged in conversation with the machine while it spends the time deemed necessary to prepare the perfect cup of tea.

Messages such as: "Your drink's on its way" will entertain the purchaser until the fateful moment when the beverage is served.

I, for one, will not welcome the advent of speaking tea machines until manufacturers have the courage of their convictions and build one which actually advises you not to put any money in it because you're almost certain not to enjoy what you're given in exchange.

Giant with six legs

IT would appear that computers are about to share at least one problem with their operators. Intensive research at American universities has gone into the production of a robot with legs rather than wheels and I am reliably informed that for a six-legged robot there are no fewer than 40 million possible sequences of gait.

You will be relieved to hear that I am not about to belabour you with appalling puns concerning gait arrays and so on, but instead will address myself to the more pressing problems of why anyone should want to have a giant metal insect crawling about the place.

What price a robot which stops people feeling inadequate by falling over more often than the operators after a heavy lunch?

The laying on of hands

ONE of the recurring themes of religious tracts is the miraculous rectification of disabilities through the simple means of being touched by a Chosen One. The computer industry has until now been happily dissociated from such unlikely occurrences; but I fear IBM has changed all that.

The latest in its series of advertisements in the Sunday supplements has a life-size photograph of an IBM keyboard beneath which the caption invites the reader to touch the image with both hands.

Now, out there in consumerland, there must be a good statistical possibility that, among the million or so Observer readers there are several loonies who believe in the tactile righting of wrongs.

Could it be that IBM UK, which placed the ad in question, is hinting that, by some handy miracle, its US parent will make the Personal Computer available in these islands before its 1982 advertising budget is exhausted?

Left out

SIX hundred lucky telephone subscribers in Alston, Cumbria, have been treated to ex-directory numbers without charge. It is a shame they didn't actually want to be left out of the phone book, but a Buzby boob has ensured that they have been.

What next?

IT looks as if Ken Baker's term as Information Technology supremo will be curtailed before IT Year finally dies of lethargy. The word from the corridors of power is that he is to be replaced in the next Cabinet reshuffle.

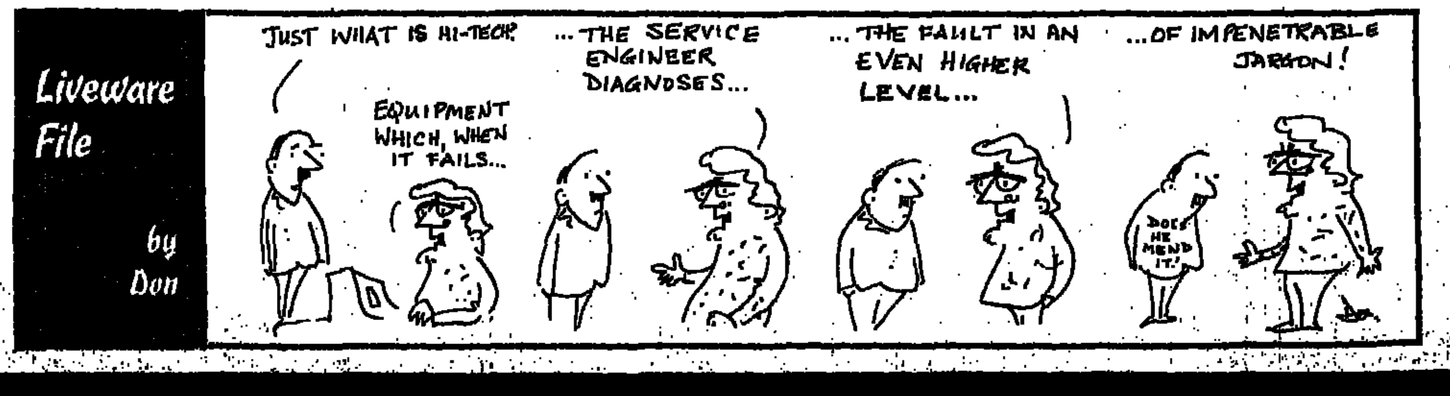
Who will take over? Will there be another IT *Minister*? What will Baker do next?

Following minimal research, I can reveal that KB is unlikely to not be offered the possibility of refusing to consider the proposal of becoming *Minister for Whatever 1983 Year is Supposed To Be Year*.

Being a staunch believer in democracy, I hereby invite you to submit *your* ideas on KB's next post, what next year will be, and so on.

10 YEARS AGO

FROM COMPUTER WEEKLY OF NOVEMBER 9, 1972: Salaries of systems managers, systems analysts and senior operators rose by more than 11% in the year from July, 1971, according to an Inbucon survey. Since 1968, DP managers had enjoyed a 37% rise, from £2,875 to £3,950. . . . Deliveries of the ICL 1904S were delayed following the disappearance of Cogar from the semiconductor market.



ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, November 11, 1982

Grow-up time for management

"GROW UP". That was the message F International managing director Alison Newell put to the assembled grey-suited industrialists at last week's annual meeting of the Confederation of British Industry.

Newell cited how her own once fledging company was now 21-years-old. The notion of coming of age, and accepting the full responsibilities of adulthood, ran strongly through her remarks. What she wants to see is the end of the passive role taken by much of industry in this country and the beginning of an active role in determining policy through bodies like the CBI and others.

Criticism of industry, and specifically the technology sector, came from two other speakers at the conference: Advent Technology managing director David Cooksey and chairman and chief executive of Standard Telephone and Cables Sir Kenneth Corfield.

Cooksey lamented the UK's failure successfully to finance new ideas. Management, and its presentation of projects, is inadequate, he said. And he called the concept of a "million new businesses, each empolying three people, no more than fantasy or political wishful thinking".

Cornfield, in a motion passed by the conference, deplored the fact "that while research and development remain a strong feature in Britain, too few of the resulting products eventually dominate the marketplace". Again, he put the responsibility squarely on the shoulders of management, who he said must design and market the right products to ensure successful wealth creation.

It is a positive sign when management begins to criticise itself. The easy option is to blame the faceless worker, and suggest that the three million plus unemployed have somehow brought their lot upon themselves.

But if the UK is to make a recovery, it will be *management led*. It is time for industry to show some vision.

Talk is not enough

IT was a quiet afternoon for information technology on the day of the Queen's Speech to open the new session of Parliament. The long-awaited data protection proposals finally are to find a place in the government's legislative programme. And as promised a Bill to make British Telecom a private company will be put forward.

But we had hoped there would be at least a hint of a national plan to exploit the UK's technology base.

In the debate following the Queen's Speech, Prime Minister Margaret Thatcher said that the government is determined to encourage the British technology industry. It seems likely, however, that she expects private industry to make it on its own, given that the right environment is established.

That certainly fits into the government's overall strategy, and was the reason why Thatcher claimed that the British Telecom denationalisation was the "the most ambitious measure of the kind ever to be presented to the Commons". In the same vein was her promise of a speedy government reply to the Hunt Committee's proposals for a national cable network.

Both these measures are sure to stimulate plenty of activity, and not a little opposition, within the computer industry. Yet one still feels the government is doing a lot of talking without putting its money where its mouth is.

That is not to say we are calling for a massive injection of funds. But the existing famework in the UK to foster the growth of high technology industries is not adequate.

Even those Department of Industry programmes which seem well-formulated are not getting across to industry the way they should. The Microelectronics Programme, the CAD/CAM awareness scheme, and others have not been as successful as they should have been.

We can all argue until we are blue in the face about the merits of the government's policy of selling off everything in sight. But there is a growing consensus that the government must do more than talk about where the future lies.

A government established framework for information technology which talks less about awareness and more about the nitty gritty is long overdue.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Mike Costello of Nottingham, who wins £5.

You can talk to the computer in various ways, including a simple language called Basic (essentially, that's plain English).

Atari advertisement in Radio Times

LETTERS

THE article on exports of computer equipment to South Arica, and a subsequent letter condemning its publication, have brought a number of letters from readers. Because of the interest any issues concerning South Africa arouses, both pro and con, we are devoting a good portion of the letters page to the subject this week. On whichever side of the fence one stands, the debate is an important one.

Blacks hate regime

R. T. STREET'S letter on South Africa is astonishing. South African land and air raids on Mozambique and Angola have ruined these countries' economies. The South African regime is based on taxes collected from multi-national firms who invest large amounts of capital in SA. A high percentage of this investment comes from UK-based firms.

Using this wealth the regime is able to finance a numerous and well equipped military apparatus which is used to wage war externally as well as internally in order to maintain the status quo.

Resistance to this regime is demonstrated through rioting, strikes and guerilla activity. Guerilla groups can only survive if they have the active support of the local population. Demonstrations tend to be drowned in blood. It is apparent to me that this regime is hated by the blacks who form the majority of the population. It is also hated by a section of the whites.

M. J. MARTIN
Leyland Vehicles, Lancs.

Economy is not stable

IN reply to R. T. Street's letter (CW, October 21) I congratulate Computer Weekly on the article about computer exports to South Africa. It was very revealing and informative, albeit depressing to discover the extent of British computer support for apartheid.

Quite the contrary to Street, the South African economy is not stable. How can anything be called stable which is based upon the blatant oppression and exploitation of 20 million people?

These people will undoubtedly bring progress soon to their country, it is our responsibility now to end all forms of support for the racist apartheid regime.

MUFFY THOMAS
University of St Andrews.

Computers for the good of everyone

THERE has been a fair amount of comment in the computer Press in relation to exports to, or jobs in, South Africa. I felt that the article (CW, October 7) destroyed many of the myths about what computers are used for by the apartheid regime, but I feel that I must answer some of the points raised by Mr Street in the October 21 issue of Computer Weekly.

He finishes his letter by calling the article "Communist clap-trap" and suggesting that no computer journal should print such an article. I am personally a member of the Labour Party, I support the Marxist newspaper Militant so I must say that the article in no way reflected a Marxist viewpoint.

He should perhaps seriously ask himself how stable the South African economy really is. We can see today the cracks appearing in the SA economy, and the black workers becoming aware of their strength and are seeing the need to change society. It is not Russia that is threatening the South African economy but the SA system itself, which is providing the grounds for it's own overthrow by the black workers.

When the workers move to take over the economy for the needs of the majority of the population then we shall see the beginnings of democracy in South Africa. Then we shall see computers being used for the good of the community and not for secret dossiers of people fighting for their freedom.

PETER GIBLETT
AUEW/TASS
Middlesex.

'Emotive, abusive and uncritical'

WHILE I welcomed the useful information contained in the article "How the trade in computers helps to crush human rights" (CW, October 7), concerning sales of computers and associated items to South Africa, the general tenor was emotive, abusive and uncritical.

Firstly, a large picture of "South African police charging a peaceful demonstration of women . . . " is surely a prime example of selective reporting. No information is given about the context, size and place of the alleged demonstration. It is also suggested that such phenomena are everyday events in South Africa. I would also respectively mention that many police forces in the world break up demonstrations, peaceful and otherwise, using more forceful tactics than those commonly employed by the South African police.

Secondly, the article states that computers are used to operate the "inhuman" pass system administered by the several Bantu Administration Boards.

It is true that all blacks working and residing in geographical areas designated as European, are required to be registered with the appropriate authorities. The formality of registration and the small cost is usually arranged by the employer. In practice, the onus of registration lies with the employer in domestic, commercial and industrial employment. Employers are fined if they are found to be using unregistered labour; the blacks in question are not fined.

The surplus of receipts in excess of the running costs of this scheme are utilised to improve living conditions in the black homelands which are administered by the Bantu Administration Board. The aim is eventually to grant independence to these areas. This has already happened in the case of Transkei and Bophuthatswana. If a (white) South African wishes to travel through these territories or work in these areas he is required to apply for authorisation from the appropriate body. When the number of whites wishing to reside and work in, say, Transkei reaches a significant number, it would be sensible to administer this process by means of a computer.

It must be stated that there is no compulsion for blacks to work in European areas. Quite the contrary, the government is attempting to stimulate economic activity in the black homelands prior to the granting of independence. Those blacks who do seek work in European areas do so of their own free will, coupled with a desire to earn higher wages and perhaps to adopt "European" habits.

Thirdly, the South African Defence Force is not "illegally deployed in Namibia" which is "occupied by South Africa". Namibia is currently administered by South Africa and the government has consistently reiterated its desire to grant autonomy to the region on the basis of free and fair elections. The reason why South African troops are deployed in Namibia is due to the fact that there is an ongoing, low key war around the border area of Namibia and Angola. Angola is openly using Cuban troops and East German "technical assistance" to mount guerilla attacks on Namibia.

In conclusion, while I found the factual aspects of the article illuminating and useful, I must deprecate the simplistic and abusive moral tone of the underlying argument.

L. W. HARDY
Marketing Development Services
Nottingham.

Helping to keep apartheid going

I FEEL I should write to commend your decision to print the excellent account on exports to South Africa by Mses Rout and Lawrence — especially following the adverse correspondence last week (CW, October 21) by someone trying to whip up the anti-Communist cause.

This is a familiar reaction in South Africa to people who dare to criticise the system, but it is sad to find support for such deliberate misrepresentations here too.

The article was valuable in that it showed how our trade in high technology goods helps to keep the apartheid system going, and this is something we should be aware of if we work in such industries. It would not be so bad if there was a clear line drawn between the use of computers for military and for civilian uses — which Amnesty International has asked the government to try to enforce. Yet Margaret Thatcher apparently says this cannot be done.

In addition, we should be very concerned that British computers are being used by the Bantu Boards in administering the laws which control the lives of black people. And when we meet white South Africans sent over here for training, or read job advertisements offering lucrative contracts for skilled personnel to work over there, we should be asking what is being done to train blacks so that some of these posts can be offered to them.

Yet where are such statements of concern from either the government or computer manufacturers?

MICHAEL GUNNER
Reading.

£1½m for us, not them

"US", I am told, is the objective case of the pronoun "we", and who am I to argue? Therefore, when I read "US software houses have been given £1½ million" by the Software Products Scheme (Software File, October 21) there should be no need to rush to the defence of our great British institution The Software Products Scheme.

After all, it should mean the objective case of "we" in Britain have been given £1½ million and that not one penny of our hard earned taxes have gone to our American cousins to produce software which will ultimately compete with ours in Britain.

As the administrators of the Department of Industry's Software Products Scheme, I can guarantee that this is correct and that the column should probably have read UK and not US software houses. British software houses who were rushing to write to their MP should re-direct their letters to: The Administrator, Software Products Scheme, The National Computing Centre, Oxford Road, Manchester M1 7ED, enclosing their applications for a grant to develop "UK" software. After all, the scheme is there to help you to help "US" to make Britain the software centre of the world.

BILL McCOOL
NCC
Manchester.

Office Automation Network

YOUR Software Month reporter (CW, October 7) asks, in Beware of the Wolves When You Seek Advice, if there is any such body as an association of word processing consultants. There is, and it is called The Office Automation Network.

The Network's members all work in word processing and office automation and they are all financially independent of suppliers. Although no-one exactly "monitors their integrity" — marked banknotes and lie-detectors aren't our style — we do ask intending members to attest to their independence before they apply.

If any of your readers wishes to learn more about The Network and its activities I would be glad to help them. I can be contacted via 01-404 5011 or at Office Futures, Amy Road, Oxted, Surrey.

By the way, Tony Teague's idea about shared discounts misses the point. The consultant would still be tempted to specify a system too costly or too large for the client's good.

ROGER WHITEHEAD
Chief consultant
Office Futures
Oxted, Surrey.

WORKPLACE

Cobol compiler validation in UK

THE first UK service for Cobol compiler validation will be set by the National Computing Centre in December. Until now UK Cobol compiler writers have had to go to the US for validation, and only one major company, MicroFocus, has bothered to do that, for its CIS Cobol.

"But now compilers can be done in this country and will be valid in the US," says Vony Gwillim, who will be leading the NCC's validation team at Manchester. All the major US Cobol compilers have however already been validated according to the 1974 Ansi (American National Standards Institute) standard.

Initially the NCC will run a pilot service, with two years funding from the Department of Industry to the tune of £50,000 a year.

"Then it will be a self-financing body," says NCC consultant Lyndon Morgan. Altogether about 150 organisations, mainly software houses, are expected to be potential customers for the new validation service.

Many UK Cobol compilers that are advertised as conforming to Ansi standards would actually fail the stringent validation tests, believes Gwillim. Sometimes they might fail because they offer non-standard implementations of standard Cobol language features.

The Validation Summary Report of the Federal Testing Centre lists many such non-standard features that have occurred in compilers. Some compilers implement the GO TO in unusual ways.

Other Cobol compilers include archaic language structures that cannot possibly be portable across different computers because they rely on peculiarities of local operating systems. An example is the ALTER statement that changes the GO TO statement during execution of the program.

"Many government agencies expressly forbid the use of the ALTER verb in their Cobol applications," the Federal Report says.

The NCC will also prepare reports of non-standard Cobol features that crop up during testing. But, says Gwillim, it will be written in English, not Yankee.

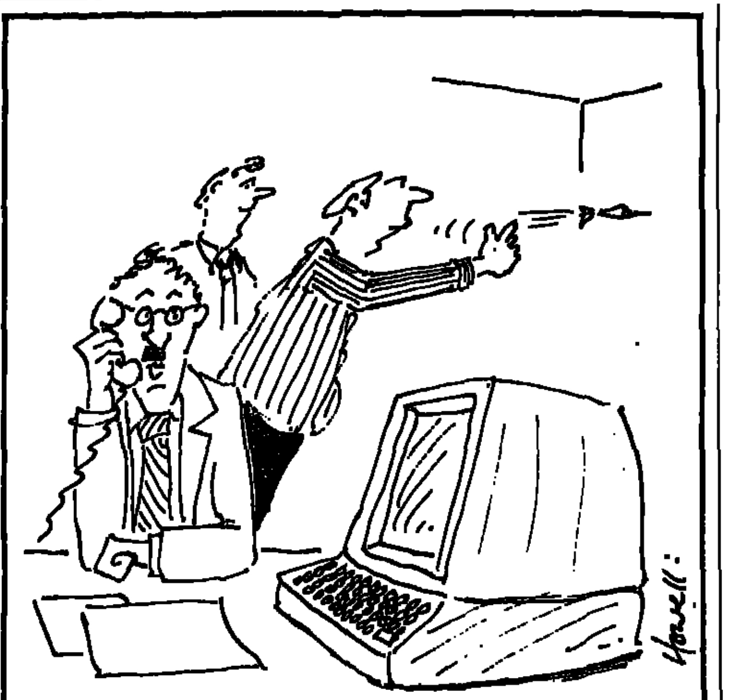
Cobol and Fortran have dominated the standards scene until now. But the quality assurance division of the British Standards Institute is setting up a validation service for Pascal.

Meanwhile the Cobol validation team at the NCC is itself being validated, by Natlas, the National Test Laboratory Accreditation Scheme. "We had to produce a quality assurance manual on how we do our testing," says Morgan.

It is reassuring to know that the validators are willing to swallow their own medicine.

Following the establishment of the UK centre, the NCC will publish a quarterly list of compilers that have been validated. It will recommend that updated compilers should be revalidated each year.

A warning: compilers that are found to have errors must be revalidated within a year. If errors are still there, the compiler will be dropped from the list.



"I suppose you think we spend all our time over here playing silly computer games."

Enough to make you green

YOUTH is no handicap to a computer programmer — the average age is about 25. But bowls champions are expected to be longer in the tooth, certainly over 50 I would say.

It was a surprise therefore to hear that a computer programmer won this year's John Player Crown Green Bowling trophy. He was favourite from the quarter finals on, and beat Lancastrian Bernard Marrow 21-10 in the final.

Winner Nigel Cranston is 23.

No excuse for an unsafe site

THOSE of you whose fire precautions extend no further than keeping a note of the fire brigade's telephone number in the shift diary (in case the operators forget it) now have no excuse for not bringing the installation up to scratch.

The British Standards Institution has just published BS6266, Code of Practice for Fire Protection for Electronic Data Processing Installations.*

Among the recommendations are guidelines on accommodation, air conditioning and power distribution, fire detection and extinguishing.

The precautions in the code are more stringent than the requirements of current safety legislation, and form an excellent basis for a comprehensive fire protection plan for any computer installation. The document contains instructions for constructing incendiary devices to test the effectiveness of your precautions. The lactose and polyurethane mat methods are described.

***BS 6266: Code of Practice for Fire Protection for Electronic Data Processing Installations. Price £9.50 (£4.75 to BSI subscribing members). BSI Sales Department, 1: Pentonville Road, London N1 9ND.**

Cut out the rotten core of testing

YOUR awesome chore of poring through page after page of octal, or hexadecimal, memory core dump, will soon be as dated as a mangle. But for many IBM Cobbler, it remains one of the despised realities of life.

Happily, there are now several debugging packages for IBM Cobol programs that aim to replace the core dump with something more readable.

One of the latest is called Xpediter, developed by Applications Development Systems of California, and now sold in the UK by International Software (IS) of London.

Xpediter costs £17,000, so you have to be sure it will save you a worker year or two before opening your wallet. The first question to pose in an assessment is: does it tackle the right problems?

If it is true that a lot of time is wasted thumbing through core dump listings then it certainly does.

"The majority of dump output is irrelevant," says IS director Peter Pryke, if anything understating his case.

Xpediter, he says, avoids the need for core dumps by allowing the user to specify exactly when and what debugging information is to be printed.

Pryke points out that the program instruction that provokes an error might lie a long way from the manifestation of it. For example, if a data variable is assigned an illegal value, the error may only be noticed when the variable is used for a calculation.

Xpediter answers this by monitoring each reference to a data variable, and printing out the number of the line of code where the illegal value first appears.

Xpediter covers both unit testing of individual program units, and integrated testing of the whole system.

Xpediter seems to be quite lucid about unit testing errors, the main ones being the illegal data assignments.

But on the open minefield of integrated testing, it is more ambiguous. Apart from system design faults, the hardest errors to find at this stage are often caused by inconsistencies in the parameters which pass information between individual program units.

Or failing this, incompatible data definitions can cause problems — such as using a data variable as a number in one unit, and as a character string in another.

Xpediter offers no easy answer on the inconsistent parameter conundrum. But it does offer a TRACE command, which will give the line numbers in all program units where a specified parameters are referenced. Or it can be used to identify parameters whose value is changed in a particular program unit.

This is not altogether revolutionary. More interesting is the ability to use boolean variables to display data items on a conditional basis.

This can be used to pick out data variables whose type has mysteriously changed from one module to the next.

According to Pryke, this ability to perform conditional tests on programs is the main strength of Xpediter. It enables many tests to be built into one program run.

Xpediter will not enable programs to debug themselves. In fact what strikes one is that use of it is an art in itself, and hardly a threat to programmers.

These little horrors take $8 billion a year — and that's just in the US.

Consultancy is not for faint-hearts

Les King continues his series on changing job functions and titles.

ALMOST every analyst and programmer at some time wants to become a consultant.

This is the entirely natural reaction (nothing to worry about) of any DP professional who, having acquired valuable skills, wishes to capitalise on them.

On the face of it, consultancy offers the opportunity to spread your wings while providing the extra satisfaction which comes from acting in the capacity of expert.

The other major benefit is the sheer variety of work, giving rise to the powerful recruiting argument of "why work for one company when you can work for 50?"

Freelancing, on the other hand, seems to offer similar benefits with the result that the differences between the consultancy and freelance environments are not always clear, especially as many freelance agencies refer to themselves as consultancies and many so-called "software houses" do no more than provide bodies on contract.

The true consultancy undertakes development projects for which it retains full managerial responsibility.

At one time, this also implied that the work would be done on the basis of a fixed price although, today, this method of operation is almost extinct.

Because managerial control is retained, the consultancy can be fairly flexible in the allocation of staff to a project, with the result that some members of the project team will be in a position to gain new technical skills.

The true consultancy also operates at all levels including feasibility study, selection of hardware, purchase of hardware, advising on staff organisation or even taking over a client's whole DP function and running it on a turnkey basis.

Although the better consultancies offer a reasonably well-structured career path, there is always the problem of an unpredictable workload depending on the day-to-day performance of the salesforce.

Consequently, the employees of a consultancy may often find themselves working away from home or doing work beneath their ability.

Indeed, one of the most successful UK software houses (no names — no pack drill), expects its high-level consultants to do programming or even telephone sales work, if consultancy assignments are not immediately available.

Consultancy also tends to be a very high pressure environment. This is partly because of the erratic workload but mainly because of the need to meet tight deadlines whatever changes may have been introduced during the evolution of a project.

A consultancy is therefore no place for the faint-hearted; those who can't stand up for themselves or are unable to work long, unsocial, hours.

However, for the flexible all-round DP professional who can work under pressure, a good consultancy can provide a wealth of valuable experience with plenty of opportunity to improve both status and income.

Freelancing is a way of capitalising on accumulated skills which may provide more money than permanent employment but which lacks any real scope for career progression.

Essentially, the freelance analyst or programmer is employed to work on a client's site under the client's direct control and is inevitably used for existing skills.

"I'M FREELANCE"

Dedicated home video games on the way out

THE days of the dedicated home video game unit are numbered, according to a report* from the US. By 1992, 35% of American homes will have a video game of some description, but with the improvement and cost reduction of computer technology, the cartridge-based dedicated systems will give way to more general-purpose microcomputers, albeit with considerable games bias.

Nearly $4 billion of games-orientated home computers will be wholesaled in the US in 1992, with the average machine retailing for less than $1,000. But it is the coin-operated arcade video games which will keep the lion's share of the video business.

Almost 60% of the video game market in the US will be taken up by coin operated machines. That's about $8 billion worth. One of the researchers of the report, Steve Weissman, sees the arcade video game market as being near saturation, with new games replacing old.

"They're here to stay," says Weissman.

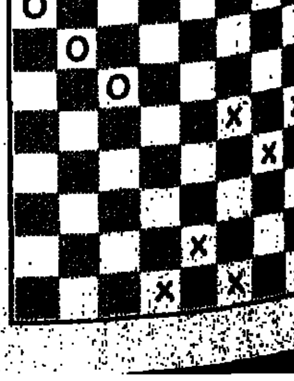
*Video Market Opportunities. International Resource Development, 30 High Street, Norwalk, Connecticut 06851 USA. Phone 203 866 6914. Price $985.

Workplace is compiled by Philip Hunter and Andrew Thomas.

PUZZLER

THE diagram on the right shows how eight chess Queens can be placed on the board so as to leave 10 squares (marked here with crosses) unattacked.

This arrangement is quite good, but there is a different one that leaves 11 squares unattacked.



Can you find it before turning to page 61 for the solution?

PEOPLE

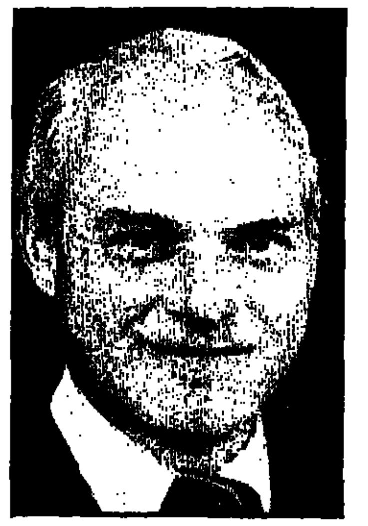
■ Mostek has appointed **Volkmar Schaldach** (above) as vice-president, European marketing. He has been in charge of the company's European sales and marketing since 1979. Before that he was in marketing and managerial positions with NEC and Hewlett-Packard.

■ North-eastern company Currah Computor Components has appointed **Rodney Holland** as sales manager.

■ Memcom International has appointed **Victor Randell** as director of European and Middle East Operations. He joins the company from AM International, where he initiated the company's Micrographics marketing effort in the UK.

■ National Semiconductor has appointed **Douglas Newman** to the position of vice-president, US sales. Since 1979 he has been vice-president, semiconductor division and European director of marketing and sales. **Donald Beadle**, formerly vice-president of North America sales with NatSemi, will take over the posts vacated by Newman.

■ **Andrew Thomas** (below) has been appointed director of Input's field service programme in Europe. He was previously assistant vice-president, field service, at Timeplex.



■ UK deputy managing director for Berisford Information Technology (Bit) is **Steve Sanderson.** He joined the company last August, having worked for ICL in programming, systems management, consultancy and sales for 15 years.

■ Shipton Communications has appointed **Tony Johns** as sales and marketing director. He first joined the company as new business sales manager, Southern region, but left in 1976 to become national sales manager at Binladen Telecommunications.

■ **Paul Bailey** joins Digital Research as director of European operations with responsibility for establishing three subsidiary operations in the UK, Germany and France. He was formerly European marketing manager for Tektronix Europe.

■ Three appointments have been made in Kalle Infotec's marketing and product division. **Tony Waring** becomes marketing manager, **Richard Griffith** informatics product manager and **Peter Barker** joins as copier product manager. Waring has been with the company for a year, joining from Olivetti, where he was sales and marketing manager. Griffith was formerly a marketing consultant with Geisco and Barker joins the company from Nashua International, where he was marketing manager.

■ Atlantic Computer Leasing has appointed **Moty Arieli** as a director on the main board. He joined the company two years ago as managing director, international operations, from Itel, where he was finance director.

■ John Attenborough (above) has been appointed director of personnel, Europe, to cover Datapoint's European network. He will be based at the company's European headquarters in Harrow. He was formerly human resourcing manager (Europe) at Prime Computer, where he worked for four years.

■ **Bob Eade**, chief executive of Thorn EMI Technology has been elected president of Gambica, the association for the instrumentation, control and automation industry in the UK.

■ **Brian Male** has joined MSA as systems consultant. He started his career in 1967 with the Hertfordshire County Council as finance trainee. He joins MSA from Waitrose, where he was area personnel manager for seven years.

■ **David Harmer** has been appointed sales manager of Mercury Communications. He was previously operations manager, distributed territories, at Storage Technology.

■ NEC Electronics has strengthened its sales team with the appointment of two more product sales engineers. **Ken Jones** joins the company from BL and **Jim Lillie** joins from General Instrument.

■ Co-founder of the word processing bureau Pressure Points, **Ann Southcott**, has joined WordNet as regional sales manager. She remains a partner of Pressure Points, which was set up in 1979.

■ **John Lockwood** has joined Vermont Research as regional sales manager responsible for the German-speaking markets in Europe. He was previously with Nashua as European distributor.

■ ITT Power Components has promoted **Peter Fox** (above) to applications manager, programmable controllers. Formerly senior marketing specialist for programmable controllers, Fox's earlier appointments were with Crouzet and Ekco Instruments.

■ **Dave McClellan** has joined Newbury Data as a sales executive responsible for end-user sales of the company's visual display terminals, matrix printers and microcomputer systems in the Western Home Counties. He was previously an applications engineer with Racal.

DIARY

NOVEMBER 15

Fourth annual conference: Systems controls — the future. BCS Auditing by Computer Group. London Press Centre. Fee £60. Book early through D. Ruback, Hacker Young, St Alphage House, 2 Fore Street, London EC2Y 5DH.

Visit to Cranfield Institute of Technology Robotics. BCS Bedford branch. Apply to W. Chisnall on Bedford 56013.

Visit to the Metro line, Longbridge. BCS Coventry branch. *12.45. By application only.*

NOVEMBER 17

OSIs — the network layer: the inside story. BCS Data Communications group. BCS Headquarters, Mansfield Street, London. 6.00.

NOVEMBER 22

Participative design. BCS Hampshire branch. Mountbatten Theatre, Southampton. 7.30.

NOVEMBER 24

Conference. BCS Data Dictionary Working Party. Details from Roger Johnson on 01-854 2030 ext 238.

Tour of IBM's research facility. BCS Displays Group. IBM Hursley, Winchester, Hampshire. 11.00. Details from Ray Earnshaw, University Computing Service, The University, Leeds.

Computers in retailing. BCS Edinburgh branch. Mountbatten Building, Heriot-Watt University, Grassmarket, Edinburgh. 6.00.

Medical computing. BCS Sussex branch. Royal Sussex County Hospital, Eastern Road, Brighton. 7.30.

NOVEMBER 25

Introduction to present methods of helping the handicapped child. BCS/Lincolnshire Micro Society. Details from Brian Smith on Lincoln 810753.

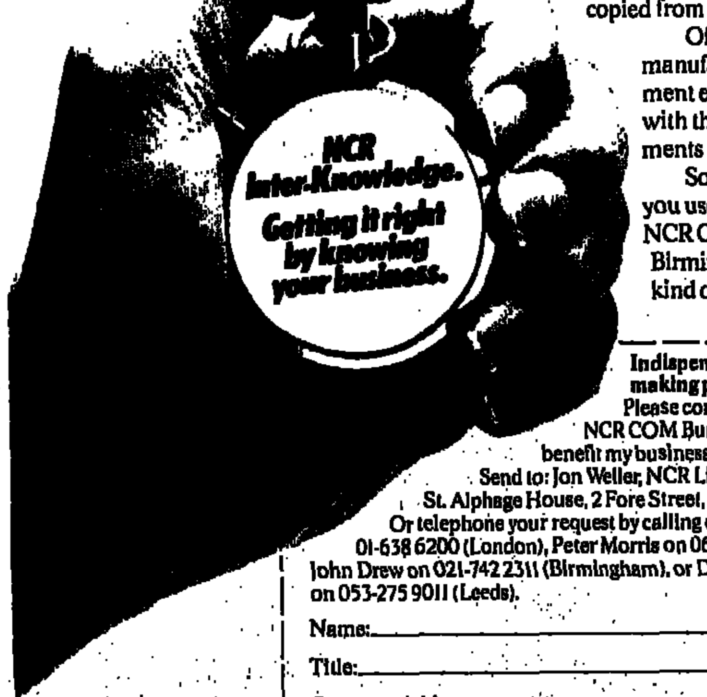
NOVEMBER 30

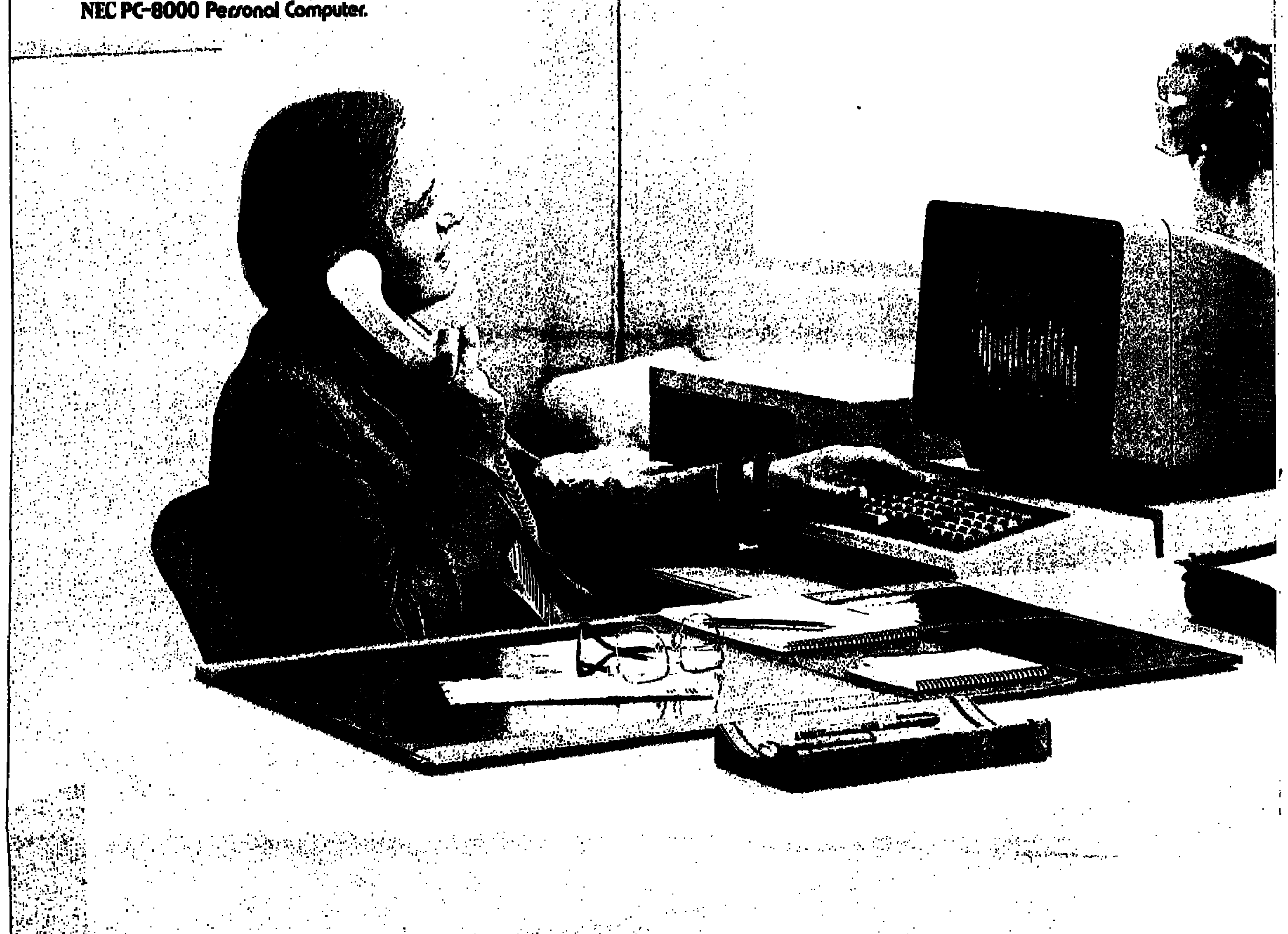
Prolog and Expert systems. BCS South-west branch. Lecture Theatre 5, Plymouth Polytechnic.

CONFERENCES

■ The Yankee Group is holding a technology update on the next generation of database on November 23 and 24. The objective is to provide an analysis of the next generation of database systems as they evolve from data processing to business information — the infobase. The update will assess current database systems and their evolution; highlight key developments which will shape the infobase marketplace; determine the factors playing major roles in reshaping database technology and address those issues of concern to users and suppliers in creating the integrated information system. The update will be held in London and the fee is £295 + VAT. Details on (09278) 4119.

■ Financial planning on microcomputers is the subject of a seminar to be held by BPS Consultants on November 24 in London. The purpose of the seminar is to define the role of microcomputing in the company's planning and accountancy function and to discuss the requirements it should satisfy. Guidelines will be offered on selection criteria for hardware and software and any future developments against which investment in software should be planned. Details from Peter Morrell on 01-439 8221.





PRODUCTS

High-performance graphics plotter from Rapid Recall

A LOW-COST, high-performance graphics plotter for use with Hewlett Packard personal computers is being supplied by Rapid Recall direct from stock. Known as the HP7470A, it will print multi-coloured diagrams, charts, text and the like, on either paper or overhead transparency film.

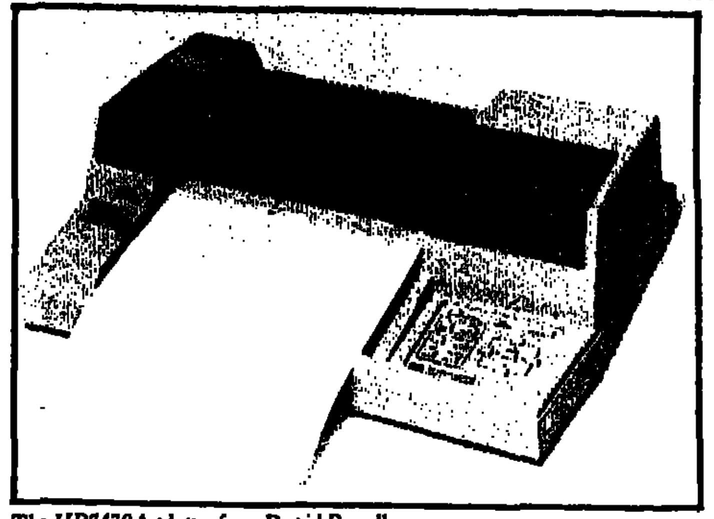
There are many applications for the plotter and its computer host. Most common will be in scientific areas for the graphic presentation of results, in enginering and in the preparation of charts, graphs and pie-charts for sales and management presentation.

The HP7470A is easy to use. Programs resident in any HP Series 80 personal computer guide the operator through the graphic generation sequence by asking simple questions. Once the computer has compiled the diagram or graph, the plotter will print it using up to seven colours. This is the case even though only two coloured pens can be fitted to the plotter at the same time since the plotter stops, and the operator is requested to insert a new "snap-in" colour pen when a colour change is required.

The plotter accommodates paper of 8.5 by 11 inches or 210 by 297 mm and will print within an area up to 190 mm (7.5) inches by 273 mm (10.7 inches).

Resolution is very high, with the smallest addressable step size 0.025 mm (0.001 inches). Because of this high-resolution it will plot straight lines and smooth curves that give an artist-drawn appearance. In addition, printing is fast. Lines are plotted at speeds of up to 38 cm (15 inches) per second and labels and annotations in a variety of type styles at up to six characters per second.

Rapid Recall (CW), Rapid House, Denmark Street, High Wycombe, Bucks. Telephone: (0494) 26271.



The HP7470A plotter from Rapid Recall.

Compec debut for a desk-top printer

A DESK-TOP industrial grade printer, the Centronics 154, is now available from Datac.

With a print speed of 120 characters per second, the 154 can print text of up to 132 columns at 10 characters per inch with 11x8 dot matrix and is bi-directional with a logic seeking capability.

Pin addressable graphics with six or eight pin mode makes the 154 compatible with many other printers. Resolution is 72 dots per inch vertical and 70 dots per inch horizontal.

Interfaces offered are Centronics parallel on the model 154-2 and RS232 serial on the model 154-4.

The Centronics 154 will be on display on Datac's stand (number 6104) at Compec with two microcomputers, the Datac MC MicroController and the rugged, waterproof Husky.

Datac (CW), Tudor Road, Altrincham, Cheshire WA14 5TN. Tel.: (061) 2361/2.

Multi-user software for the Commodore user

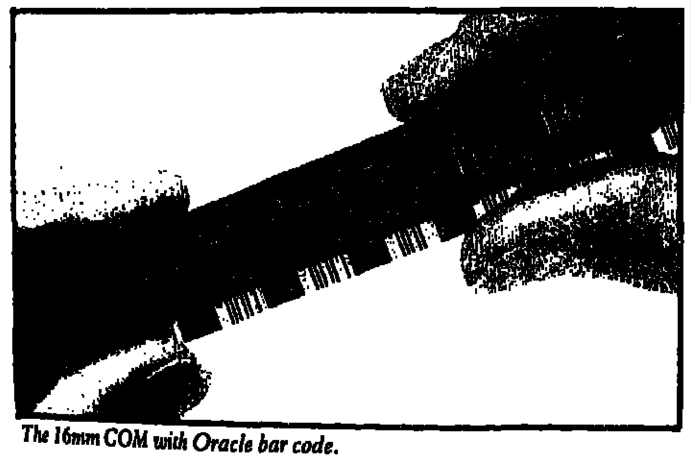
A NEW multi-user system to enable CBM (Commodore) 8032 and 8096 users to run Anagram's accounting and stock control packages on up to five CBM machines simultaneously has been announced by Anagram Systems of Horsham, the software house that wrote Commodore's own accounting packages.

Anagram, formed in 1980 by systems analyst Dick Simmons and programmers Chris Berry and Dave Massie, says that the multi-user software requires no additional hardware, black boxes or interfaces, and costs £300 per terminal in addition to the cost of the normal single-user package.

The sytstem enables the user to configure one CBM machine to act as the master computer, and the rest as slaves. The slave machines can make enquiries and print reports, but not create or update files.

Anagram Systems' packages have sold in the hundreds through Commodore dealers under the Commodore brand name, and the company is launching its new integrated accounts system.

Anagram Systems (CW), 60a Queen Street, Horsham, West Sussex RH13 5AD. Tel.: (0403) 50854.



The 16mm COM with Oracle bar code.

Kodak COM service

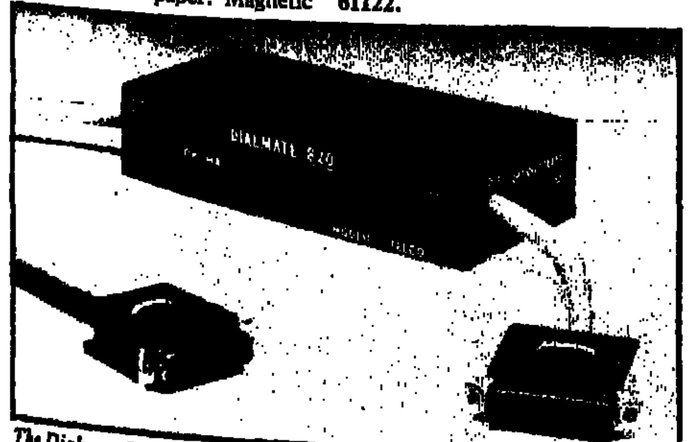
A CODED computer microfilm (COM) service announced by Kodak to operate from the company's Microfilm Services Laboratory, PO Box 202, 34 Rylston Road, Fulham, London, SW6 7HH, will provide a new capability for the expanding base of Kodak Oracle microfilm equipment users.

The Oracle equipment is a 16mm microfilm system on which automated document retrieval is based on a binary bar code beneath each document image.

With the new service users will be able to consider applications involving computer produced documents without the need to print out on to paper. Magnetic tapes will be sent to Fulham where they will be processed through the Kodak KOM080 computer output microfilmer. In the process, special software in a Hewlett Packard magnetic tape reformatter interprets the retrieval data in each page image to be Oracle encoded.

Kodak says the service should attract new users who require more automated methods of COM data retrieval which are currently limited to manual look-up microfiche techniques.

Kodak (CW), Station Road, Hemel Hempstead, Herts HP1 1JU. Tel.: Hemel Hempstead 61122.



The Dialmate 820 "smart cable" auto-dialler.

Intelligent auto-dialling

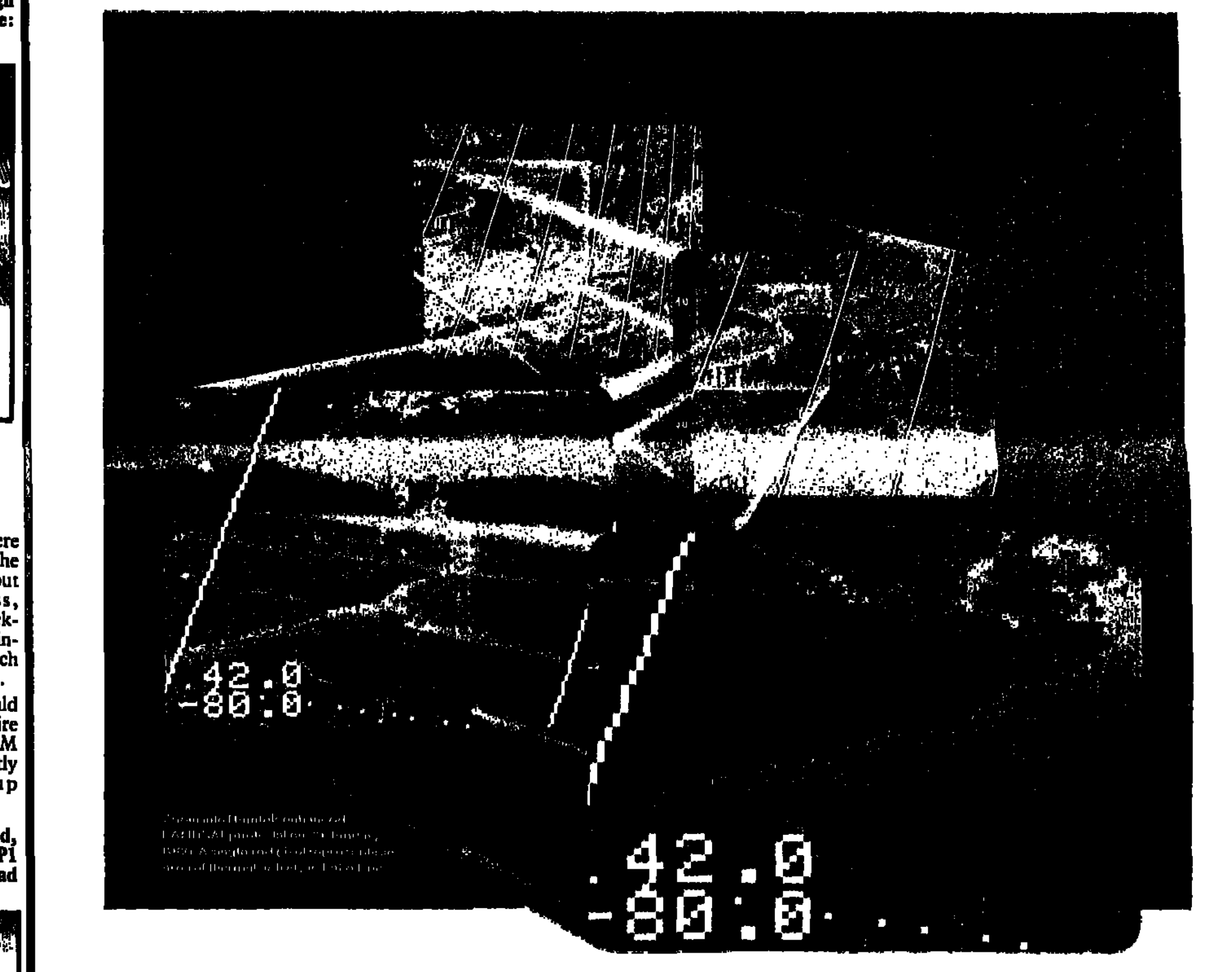
NOW available in the UK from Dialogue Distribution, the Cermetek Dialmate 810 is an intelligent modem auto-dialler that can be retrofitted to modems that do not auto-dial merely by replacing the existing modem-to-terminal cable.

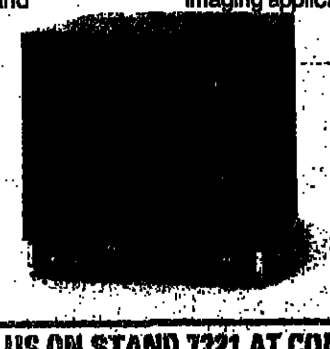
The Dialmate 820 is described as a "smart cable", as it replaces the RS-232C cable that normally exists between the modem and the data terminal.

The unit receives serial dialling commands from the terminal keyboard and returns its dialling status for screen display. The direct-connect modem is linked to the telephone line through the Dialmate 820 so that, after successful auto-dialling, the data call can be transferred to the modem.

When the Dialmate 820 is used for modem dialling, an accompanying telephone is not necessary unless voice communication is also desired.

Dialogue Distribution (CW), Watchmoor Road, Camberley, Surrey, GU15 3AQ. Tel: (0276) 682001.





Computers in schools are generally accepted as 'a good thing' .... Dan Simpson meets some pupils who don't agree

A micro in every school sounds like punishment to the kids themselves

Kenneth Baker says micros are good for kids . . . but how do they feel about the value of computers?

THE government has a policy of ensuring that every school will have at least one microcomputer, and Kenneth Baker, Information Technology Minister, has been charged with fulfilling that policy.

Educators, teachers and parents assume that computers in schools are "a good thing", but no-one seems to have asked the children themselves what are their views on the topic.

A number of schools now expose their pupils to computing in some form or another and the entrance to public examinations ("O" and "A" level) in computing has doubled for each in the past few years, so it seems opportune to ascertain the views of school pupils on just what has been achieved.

For a sizeable minority of such pupils at least, we seem to be going in the wrong direction. If this is the case, we should take stock and reconsider the accepted wisdom that progress is being made.

My experience is drawn from a small sample of "gifted" pupils in one geographical area, but I have no reason to believe that it is not applicable everywhere. Such children are not happy with the computers and computing available to them. The microcomputer is simply not sufficiently powerful and is too awkward to use for it to be a useful tool for these children.

So, they will not use it. But things are worse than this, because they feel that computing is not, and never will be for them. They are simply "turned off". One wonders where the next generation of innovative computer scientists is to come from.

For the purposes of interviews conducted with these children, I took the word "gifted" to imply Oxbridge applicants. Visits were made to nine schools in December 1981, and 44 pupils were interviewed.

The interview attempted to elicit the pupils' views on a number of topics. First, in order to find the pupils' knowledge and views on computers in general, we had short discussions on the power of computers, the stereotype of computers and computer personnel, and the media view of computers. This was followed by longer discussions on schools and computers and the impact the pupils expected computers to have on their later life.

The group was made up of 17 boys and seven girls specialising in science subjects and 10 boys and 10 girls specialising in arts subjects.

Of these pupils, two doing "A" level computing, three had "O" level passes in the subject, seven had met the subject in general studies and eight had seen a computer at some time or another. That means that more than half of them had managed to go through school without coming into contact with their school's computer.

The effect of contact with computing was interesting. Those who had studied the subject tended to be less than enthusiastic about any further contact with computers. Of those who had not studied computing, about half wished that they had had an introductory course.

One of the "A" level boys was only doing the subject because the timetable fitted, and now wished it hadn't! One of the more enterprising boys had never studied the subject and would have nothing to do with the school's microcomputer, yet used a terminal to a mainframe to produce the school magazine. Only a few had experience of computer assisted learning and this experience can be politely described as a disaster.

The interview started by discussing the use of computers in various fields. These fields were control of space ships and cars, game playing with chess and backgammon, music, and teaching and learning. The pupils had a good understanding of the impact of computers in these areas. They had a good feel for the relative abilities of computers of different sizes and power, but they had no feeling at all for the cost of such equipment.

By and large the pupils felt that computers would be satisfactory for controlling space ships, but felt that they needed a person around to give back-up because of circumstances which would not have been foreseen in the program.

They were aware of the computing power needed in such applications, but felt that the expense was necessary due to the number of variables which have to be monitored. They also pointed out that computers would only be a small part of the cost of a space project.

They were rather more sceptical about the value of using computers to control cars.

The pupils showed a good feel for the use of computers in game playing. The sample included a number of good chess players who poured scorn on the micro-controlled chess machines, and even those who were not too good at the game considered such machines as only toys. All the pupils guessed correctly at the way chess programs are written and pointed out that a very big powerful computer would be useful for openings and end games.

Strong feelings about computer music were held by all the pupils. All suggested that it would be possible to program the rules of melody and harmony and so get the computer to produce a piece of music but, of course, here the question of emotion introduced itself. The question of lack of flair was discussed and much was made of the emotions of the composer.

Moving to the subject of the computer in education, the pupils saw a teacher as also a learner. It was this interrelationship which was at the base of their lack of faith in the computer as teacher, although all agreed that because they include a database of facts and a simple selection program, most computers could pass most "O" levels.

The only subject which gained exemption from this criticism was English, where it was pointed out that you need a style. All pupils felt that in terms of academic learning, a computer could manage no more than regurgitation.

The idea of an expert system seemed not to have occurred to any of the pupils.

A general point was made by all – the use of computers in teaching might be a good thing, but only for other pupils and certainly not for them.

The pupils who had used computers had not found it an enriching experience. They described how, when a computer had been used to simulate experiments, it had been a waste of time because of a lack of power. They had not been able to do the simulations they had wanted, nor pose the question which struck them as interesting.

Many said that if you are going to do experiments you should do them properly, even if it costs a lot more. If you can't do the experiments properly, then you get just as much from reading about them in a book.

The reaction was certainly "a computer teacher is not for me". This response was because they all saw learning as an enjoyable activity, and they frequently pointed out that the good teacher is one who can go off at a tangent to explain something, while the computer grinds remorselessly on.

No agreement was reached on exactly who would benefit from computer aided learning. Some saw it as useful for basic remedial teaching, while others pointed out that this was where the need for good teachers was strongest.

Others saw the computer as giving more individualised teaching to a person and so cutting out the need for streaming of pupils. Despite the fact that all felt this a laudable aim they were not sure whether it was achievable.

> **‘ They felt that while some product design could make computers more attractive, it was really what you could do with computers which provided the major turn off. Computers were found boring and difficult to use ’**

All the pupils agreed however, that, from their experience, the computer would have an initial, but short-lived novelty value.

A final comment made by a number of pupils is worth reporting – "the teachers we haven't liked are the ones that remind us of computers".

When asked to describe a computer, all the pupils described a microcomputer, although some added that if they hadn't seen one at school they would have given a "flashing lights description". They all defined a computer as a logical machine which could be programmed to analyse data.

They felt that while some product design could make computers more attractive, it was really what you could do with computers which provided the major "turn off". Computers were found boring and difficult to use.

The word used most often to describe experiences of computing was "tedious". One person described the computer as "lots of bits of wire with nothing going right". Those who had programmed had not enjoyed using Basic and all asked whether anything better was available – "surely there must be" was their response, when I evaded the question.

Heated arguments took place on the question of whether people would find computers more attractive if their interfaces were functional or more human. Although humour was considered important, we "computer people" were warned about providing an interface which offered more than the computer could deliver. Most pupils agreed that before computers would ever "catch on" they would need voice input and output and some high quality graphical output too.

The pupils were scathing about people who work in computing. A popular image of a computer person was "a young man, smartly but unfashionably dressed, carrying a clipboard and saying 'I'm going to Milton Keynes'". Others saw computer people as "a gang of boring farts who spend all Saturday messing about in Laskys".

The pupils were asked to close their eyes, think of a computer person, and describe what they had thought. The picture which ensured is not at all flattering: thin, weedy, small, glasses, hard-faced, boring, logical with no emotions, middle of the road, average, not special in any way, people who wear digital watches, not logical, just patient. Two described by everybody (except one girl) as "male" and "boring".

There was also a strong feeling that computer types were interested in nothing but computers and their jobs. Just about everyone had a story of someone (themselves included) who had started a course in computing but had opted out fairly quickly because of the other people on the course.

I have only reported the comments of a small minority of pupils, and I do not wish to imply that these comments could apply to all pupils in a school. Neither do I wish to suggest that computers in schools to date have been a waste of time and effort.

But microelectronics projects and funding for computer aided learning, have had no effect at all on these pupils. By and large they feel that they should know something about computers and they feel they would have liked to have used computers.

Those who have had this experience have not found it a particularly positive one. We have identified two particular reasons for this. First, the lack of power of the computers and programs currently available and second, the lack of any usable interface to the kit.

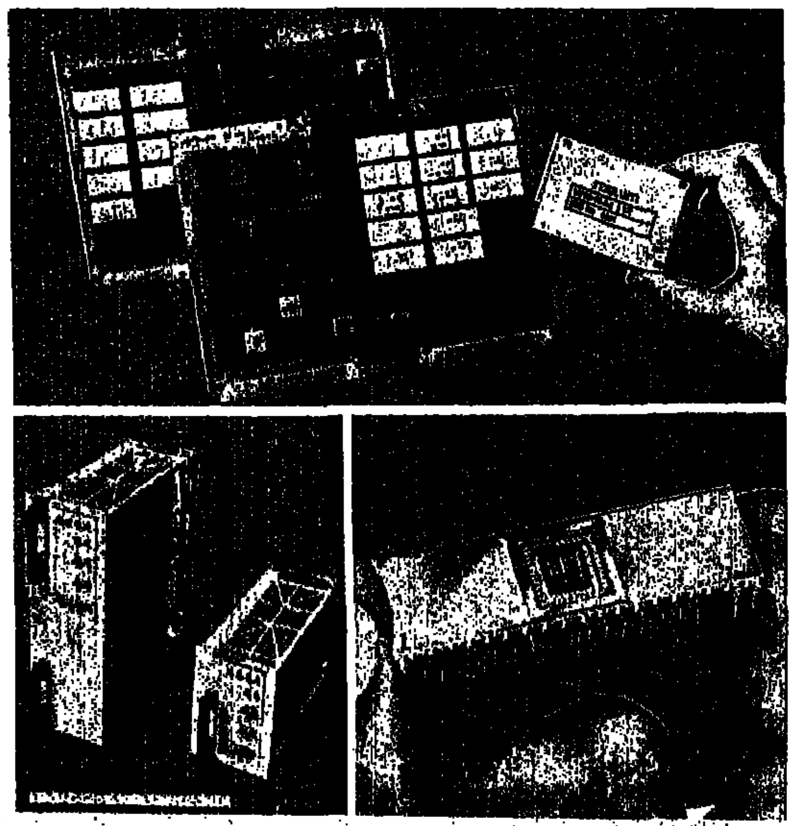
It is difficult to suggest any solution to the first of these problems. Even if the pupils are given free access to large mainframe computers, there is little software available to them and even such things as the cost of the phone call can cause insuperable problems. For the second problem there is a little more hope. Projects such as LOGO have shown that for younger pupils suitable ways of using the computer can be found.

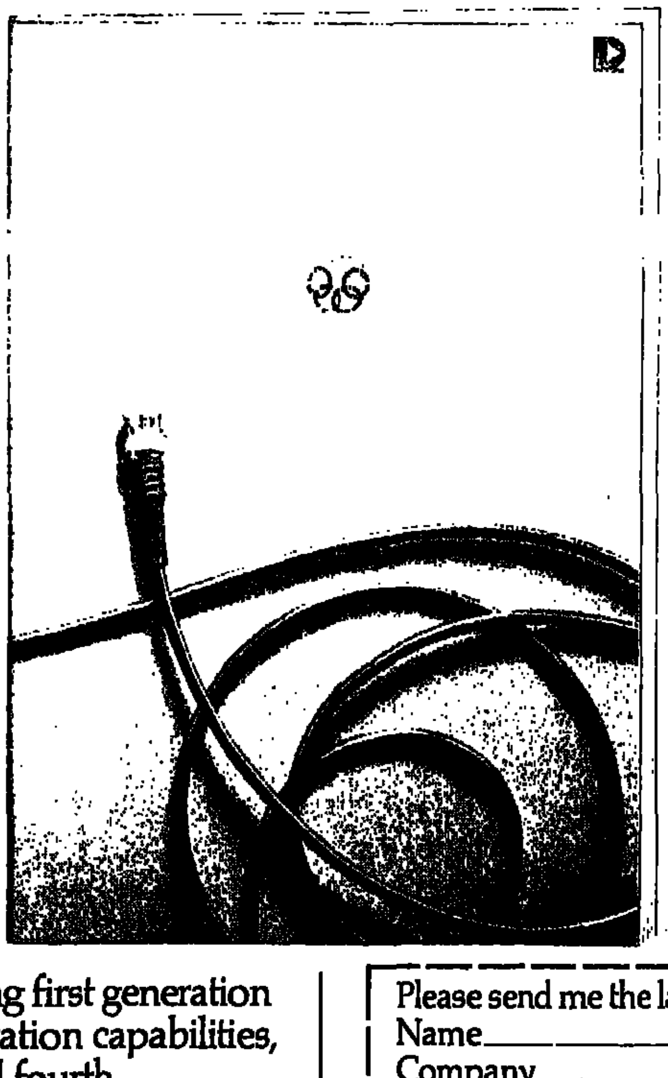
In the junior schools and the lower years of secondary schools the chances of benefiting educationally from the computer are rather more promising, but for the fifth and sixth former I cannot see much hope on the horizon.

Possibly the best we can hope is for teachers to search out research workers in their local higher education institutions and to try to convince them that some of their computer programs should at least be demonstrated to sixth form pupils.

One thing is certain, the kind of pupils we interviewed will not use toys.

Dan Simpson is director of studies in the Department of Computer Studies at Sheffield City Polytechnic.





Start of an ambitious encyclopaedia on fourth generation systems

Designing and Programming Modern Computer Systems, Vol 1. Svetlana and Kartashev. Prentice-Hall International. £28.15.

THE authors of this book are nothing if not ambitious. They say that their intention is to produce an encyclopaedia of modern knowledge about computers and systems of the fourth generation.

Volume One is primarily intended for graduate level university students, teaching staff intending to start new courses in modern computers, and specialists new to the industry.

The book is confined to Large-Scale Integrated modular computer systems, which accounts for most of the computers in common use in the Western world.

The book describes these systems as having modular architecture, being capable of distributed processing and with software controlled reconfiguration of connections between modules.

The key feature of the fourth generation machines under consideration in the later parts of the book is that they have adaptable architectures.

For those who grew up with the fixed configuration transistorised devices of the second generation and the no less inflexible machines of the integrated circuit-based third generation, the idea of flexible structures which will reconfigure themselves from multi-computer into array or pipeline processing systems is novel indeed.

And in this respect the authors may have fared better than they intended. The book is readily understandable to anyone reasonably well-informed about developments in hardware and software.

There is a clear systems diagram at the beginning, explaining the sequence and content of the chapters, and this diagram is followed by equally clear and easy-to-follow diagrams elsewhere in the volume.

Having pointed out that the current diversity of computer systems makes a description of the general architectural types difficult, the authors suggest that one way to progress towards a common understanding is to define a computer in terms of micro operations.

This means reducing the description of an architecture to the set of elementary actions it performs. The early chapters deal with the architectures of the 1960s and 1970s in those terms, and thereby lays down a natural path towards a description of flexible architectures in the same terms.

For anyone trying to understand the technical and architectural innovations being attempted in Japan in the fifth generation project, this is a useful reference work.

Kevin Cahill

"All right, then, you tell me the right part number!"

Stealing of secrets is not a crime

Countering Industrial Espionage. Peter Heims. 20th Century Security Education Ltd.

SECURITY, in all its forms, is something that most people worry vaguely about but most companies – particularly the smaller ones – do very little about. Perhaps the most important action that can be taken is to heighten the general level of awareness. Reading this book would help.

Industrial espionage is defined by the author as "The stealing of secrets". The point is made that industrial espionage is not, in itself, a crime although punishable illegalities may be committed in the course of it.

The first part of the book – the Threat – is really a series of anecdotes describing a remarkable variety of events where information has been obtained, often quite legally, about the activities, plans, technical products and processes of industrial and commercial companies.

Philip Rule

Watch out – there's an IT salesman about!

What To Buy for Business. John Derrick and Philip Oppenheim. Century Publishing. £5.95.

IF you've ever wondered why you bought that Apple II which only the children use to play games on, you could do worse than read Chapter 11 of this book.

It's titled The Sales Game, and is an acid and revealing account of the sales tactics used in the office technology business. Apart from uncovering the often forgotten fact that Tom Watson, the supersalesman who turned IBM into the giant it now is, left NCR with a jail sentence hanging over him for alleged illegal sales practices, the authors point out that your friendly neighbourhood salesman is on nobody's side except his own – and certainly not on yours.

The authors remind the reader that the salesman's job is to sell you his company's product, not to see that you make the best or wisest choice.

The opening chapter on consumerism in information technology contains far more profound implications, particularly for micro users. A series of well-chosen cases show how consumer style branding is used by different companies to sell the same product at wildly differing prices.

One example is the Rank screenless word processor branded by Nexos until Nexos packed up, but widely rebranded by other companies.

Another invidious practice is sale of obsolete and overpriced technology. Derrick and Oppenheim recount how Olivetti used a powerful advertising campaign to sell the TES 401 screenless word processor for £4,595.

According to the authors the machine was overpriced, obsolete and due to be dropped by Olivetti. In the event the company dropped the machine within a few months, but not before the appropriate warning had appeared in *What to Buy for Business*. The end of the 401 saga was the sale of the 401 by Olivetti at an end user price of £1,900.

This short book is an excellent reminder of the need for the dictum Caveat Emptor, and is a sharp pointer towards the substantial shortcomings in the marketing techniques of some seemingly reputable companies in the IT business.

K.C.

A pictorial approach to database design

Logical Database Design. R. M. Curtice and P. E. Jones. Van Nostrand-Reinhold, 1982. 227 pages

ONE of the most progressive steps that database design technology has taken in recent years has been the clear separation of the physical and logical aspects of the design process.

This book introduces and illustrates the use of a notational system to aid logical database design. The notation is essentially pictorial in nature and allows the construction of logical data structures (assertion templates) that may later be mapped on to physical DB structures.

The book is written in six chapters. The first of these introduces the basic design notation. Chapter 2 is then used to show how it can be applied to a fairly sophisticated case study: the design of a new process plant database.

Chapters 3 and 4 delve more deeply into the logical design process. Here, the principles of factoring are described – both of objects and of relationships. Subsequently, there is a discussion of domains, assertions and data elements that concludes with a taxonomy of the latter.

Chapter 5, the longest chapter, provides a more detailed exposition on the design notation that was previously introduced in Chapter 1. It introduces several new concepts and facilities and then goes on to describe a variety of design rules and principles relevant to logical database design.

The final chapter is devoted to miscellaneous topics. Here, three important issues are discussed: correspondences (or [illegible] relationships), the documentation of a logical design, and, a comparison of the author's approach (the associative data model) with the Codasyl and relational methodologies.

Considerable thought seems to have gone into the content and organisation of this book. [illegible] doubtedly, it is aimed at specialists.

Philip [illegible]

COMPEC '82

Humble system builders' show has become an important event

THE fact that Compec gets bigger and better every year despite the recession is now taken for granted. The number of visitors expected to come through the doors of the Grand Hall at Olympia next week is in the region of 40,000.

Almost 400 exhibitors will pack the hall. The face of Compec is changing too from its humble origins as a peripherals and systems builders' show to one of Europe's leading annual computer events – encompassing the whole range from mainframes to micros.

Micro exhibitors make up by far the largest single category of exhibitor at Compec this year.

Compec is Computer Weekly's flagship exhibition, the annual climax to the regional Compec exhibitions, the number of which is also growing.

Next year, Compec Europe takes place in Brussels from May 3-5, while Compec Wales kicks off as the first regional Compec between March 22 and 24, followed by Compec Scotland from May 17-19 and Compec North from June 21 to 23.

Computer Weekly has sponsored Compec since 1976, providing a synergism which has turned the exhibition into the institution it is today. In addition to the official exhibition catalogue, Computer Weekly provides an in-depth editorial coverage in the form of this preview.

Visitors tend to know in general terms what they are looking for. The preview sets out to help them find it more easily by grouping exhibitors into categories as far as possible – not an easy task as some exhibitors have a multitude of products spanning a number of different categories.

This has meant that many exhibitors get mentions in more than one category.

Where possible, sub-categories have been defined within broader generic categories such as micros or printers, for instance. In other words, if a visitor is looking for daisywheel printers, the preview will say which exhibitors have them.

The stand guide overleaf will then tell the visitor where to find these exhibitors.

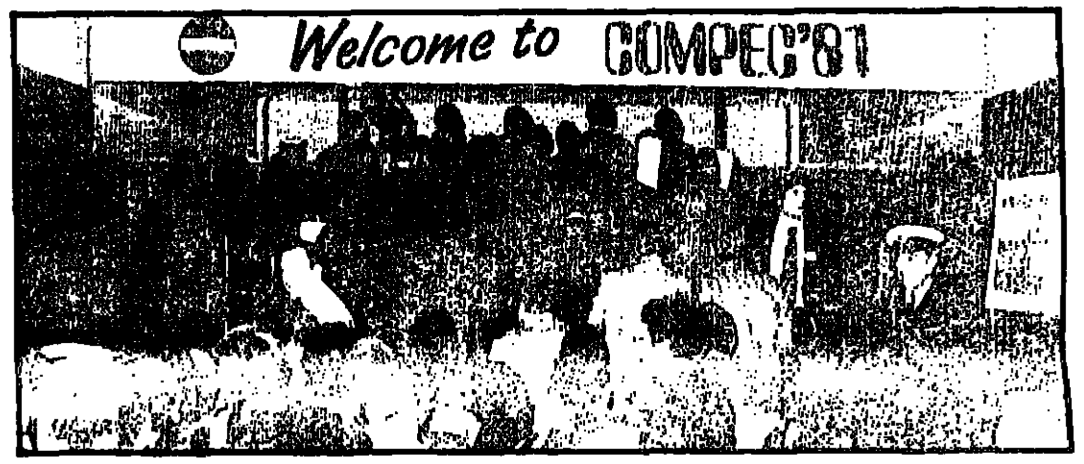
There are, of course, products which are kept under wraps right until the official opening of Compec. The Compec Daily newspaper will provide a lively bulletin of such announcements and events of general interest to exhibitors, and will be available throughout the exhibition.

The policy of charging a £2 entrance fee will remain in force, as it has been successful in its desired effect of limiting the number of visitors to actual or potential users and suppliers. Schoolchildren may demonstrate a sincere interest, but their needs are more adequately catered for by more specialised exhibitions.

Software Village proved such a success that this year over 40 exhibitors will locate their stands there. Another success carried over from last year is the touch-sensitive terminals on the Computer Weekly stand providing an automated stand guide, more details of which are provided overleaf.

The preview runs from pages 24 to 61.

If any exhibitor or visitor wishes to meet any of Computer Weeky's editorial staff, there will always be one of us on the stand, while another will be doing the rounds of the exhibition hall. We look forward to seeing you and hope you enjoy the show.



What you will find inside our special Compec '82 preview

Stand guide

Plans of the ground floor, gallery and Polygon Hall (Software Village) with complete list of exhibitors.

page 22

Introducing it all

How to get to Olympia and an automated service to allow visitors to find product types.

page 23

IT Year

A round-up of the government's IT82 campaign which comes to an end shortly after Compec, by David Fairbairn, director of the National Computing Centre.

page 24

Micros

This is by far the biggest category of Compec exhibitor. Trend-spotters will note the transition from eight-bit to 16-bit machines in the market.

pages 25-30

Minis

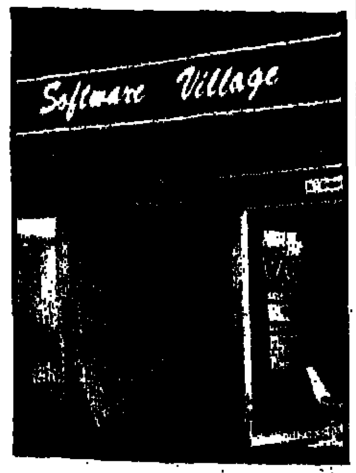
With microcomputers becoming more powerful and minicomputers reaching into the performance levels of the mainframe, an identity crisis may ensue.

pages 31-33

Office Automation

We've all heard the dreams of the pundits, now for the hard reality. The sum of the individual parts is still greater than the whole.

pages 34-35



Software

Software Village (though it's really more of a town now) has over 40 exhibitors using their ingenuity to market intangible products with the aid of limited hardware.

pages 36-38

Comms

The data communications market is a moving target. Fashions change from year to year and users expect increasing sophistication.

pages 39-44

Printers

The choice of hard copy methods has never been better, from dot matrix to letter quality, and from inkjet to colour graphics.

pages 45-47

Peripherals

The market is large and diverse, covering Winchester disc drives, floppy drives, tape cartridge drives, subsystems and controllers.

pages 48-50

Terminals

Terminals have come a long way from the days of the humble teletype and the dumb terminal. Today they can almost be full-blown computers.

pages 51-52

Graphics

One of the fastest growing market sectors of the computer industry. The trend is towards intelligent terminals.

pages 53-55

Miscellaneous

A boom industry gives rise to a proliferation of associated industries and services. We look at the other exhibitors.

pages 56-57

Banking/ Finance

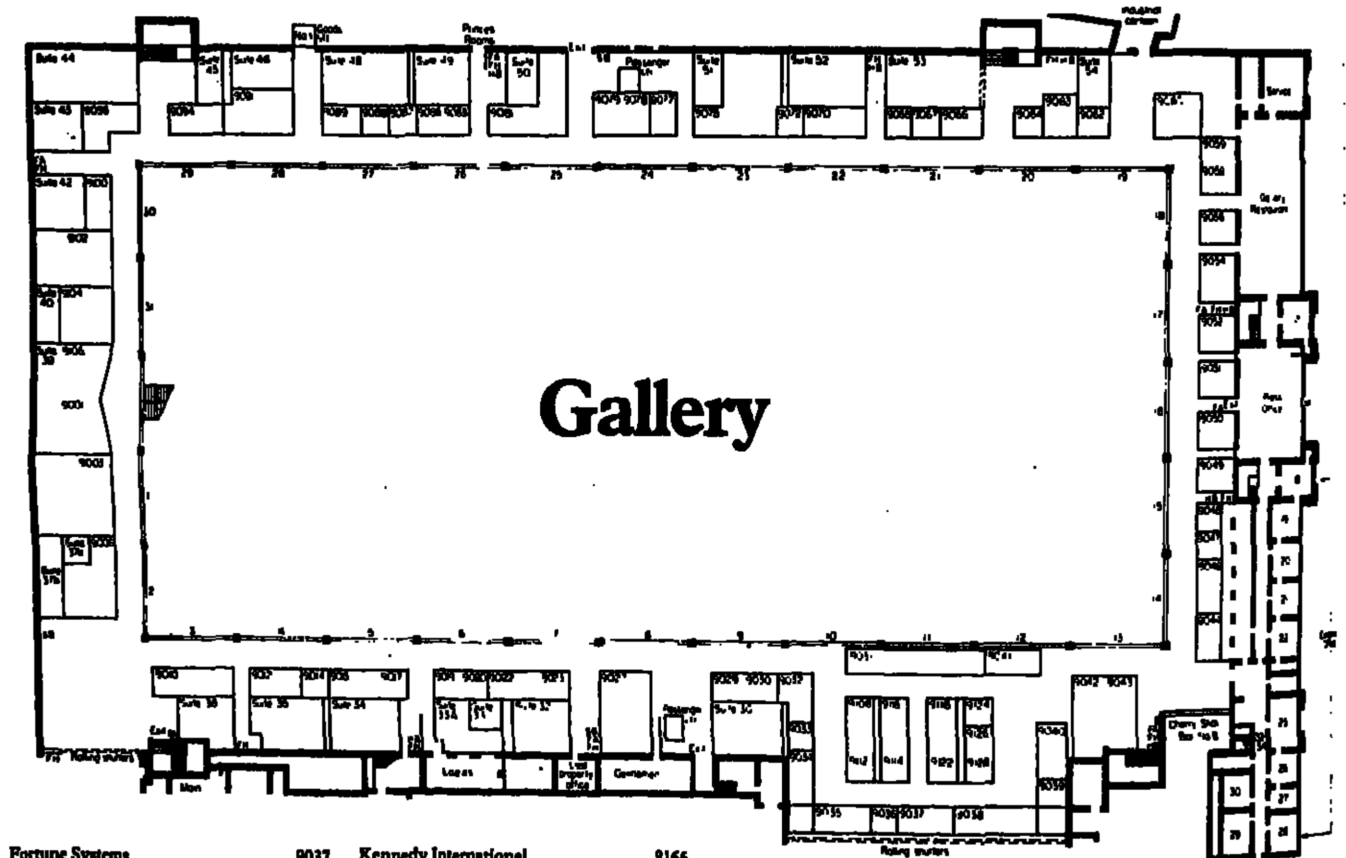
An associated service industry without which many computer companies could not have started up in the first place.

page 58

Supplies/ services

The continuing cost of owning a computer is a factor often ignored by users when they buy their equipment. A look at what is available.

pages 59-61



Your Compec stand guide

THE list below is correct at the time of going to press, and is in alphabetical order.

ABA Systems	3130
Able Computers	7168
Ace Microsystems	V60
Acorn Computers	2224/3225
Advanced Software Technology	V95/V96
Advent Data Products	7122
Aeon Business Computers	V95/V96
Alma Digital Systems	6167
Air Sales	8167
Almarc Data Systems	7112
Alpha Computer Systems	V81
Alpha Data Systems	9014
Alphameric Keyboards	2132
Alpha Microsystems UK	3176/4175/4179
Altek Microcomponents	2121
Altos Computer Systems	5214/5216/6215/6217
Ambar Components	9034
Ambitron	6190
Amezon Communications and Computer	5231
Ampex Great Britain	2140/3139
Anadex	1121
Anderson Jacobson	2112/3112
Andrews Industrial Equipment	9062
AP Computer Consultants	V24
Apple Computers UK	3214/4215
Apollo Computer UK	1126
Appropriate Technology	6194
Arrow Computer Systems	9022/9023
Astron Warwick Electronics	7115
Atari	9001/9106
Automation Facilities	7166
Ball Technical Products	4144
Barclays Bank	4205
BASF Computers	5198/6197
Baydel	9019/9020
Benson Electronics	1210/2209
Berrisford Information Technology	V58
BFI Electronics	6116
Bleasdale Computer Systems	1154
Brent Cybernex	5225
British Micro	2235
British Telecom	7175/6176
Brother	9078/9079
BTI Computers	8196
Business Computers Systems	8126
Butel Comco	9035
Bytech	8143
CACI Software Products	V64/V65
Cadcentre	1198
CAE Group	5169
Calcomp	4164/5163
Cambridge Systems Group	V22
Carter Parratt Group	9100
Case	6126/7125
Casu Electronics	8136
Caxton Software Publishing	V22
CBL	1213
Centronics Data Computer UK	7136/8135
Chubb Alarms	5125
Cifer Systems	5116/6115
CII-Honeywell Bull	3136
Cincom Systems International	V44/V45
Cipher Data Products	1172/2171
City Centre Terminals	2190
Codex UK	8106/7106
Comart	2106
Comcen Technology	9088
Commonwealth of Massachusetts	3220
Computech Systems	1230
Computer Bargains	1213
Computer Bookshop	9054
Computer-Link UK	8171
Computer Solution	9066
Computer Systems	1165
Computer Systems Products	6185/5186
Computer Talk	8140
Computer Technology	9058/9059
COMPUTER WEEKLY	5000
Computing	8132
Computrade	2167
Control Data	9010
CPU Peripherals	3164/4163
Crellon Microsystems	2189
Cristie Electronics/Data Products	7109
CTL Workstation	9058/9059
C/WP Computers	9086/9087
Dacoll Group	7132
Dacom Systems	8170
Daisy Terminals	7185
Darkcrest	8163
Datac	6104
Data Design Techniques	9048
Data Dynamics	1181
Data General	4122/5121
Data Logic	3121
Dataplus	3110
Datapro Services	8121
Dataproducts International	4150/5149
Dataram Corp	4167
Data & Research Services	9091
Datatrade	3177
Data Trak Technology	5182
Data Transfer Systems	9028
Data Translation	9044
Data Type Group	4154/5153
Dean Electronics	9064
Decision Data Computer GB	2116
Dectrade	7201/7203
Department of Industry	3224/4225
Derwent Data Systems	1168
Development Board for Rural Wales	3233
Diablo Systems	3132/4131
Dicoll Electronics	6172/7171
Digico	2160/3159
Digi-Data	9068
DEC Digital Equipment Corp	6125/5126
Digital Microsystems	5112
Digivision	8111
Dilog International	1179
Direct UK	3206
Discom Trading	9026
D. M. England & Partners	V27
DN Computer Services	2110
DRG Business Machines	2176
DRS Data & Research Services	9091
DVW Microelectronics	9094
Dynatech Nolton	1240
Electrographic Audio Visual	7117
Electronic Brokers	5129
Emco Electronics	1191
Emulex Corp	6180
Encotel Systems	4222
Enterprise Systems Group	V54
EPS Consultants	V49
Epson UK	4198/5197
Ericson Information Systems	9060
Equinox Computer Systems	1175
Eurocom Data	8131
Euro Electronics	2126
Euro Micro	9046
Eyecote	5190
Farnell International Instruments	7126
Facit Addo	1110/2109
Feedback Data	8189
Fenwood Designs	7110
Ferranti Computer Systems	6136/7135
Fife Regional Council	2180/2186
Filetab Support Services	V10/V11
Five WBR	8118
Flying Cargo	1191
Fortune Systems	9037
Fujitsu	2115
Fungus Computer Products	3144/4143
GEC Marconi	7153/6154
Gemini Microcomputers & Quantum Computer Systems	2164
General Automation	8202/8206
General Datacomm UK	8116
General Instrument — Clare Division	3175
Geveke Electronics	8159
GNT Automatic UK	4129
Gould AC Power Supplies	9006
Gould Bryans Instruments	9006
Gould SEL Computer Systems	9006
Graffcom Systems	6179
Graham UK	9052
Great Northern Computer Services	V21
Gresham Lion	4153/4159
Grundy Business Systems	8154/8156
Hal Computers	9042/9043
Halcyon Data Communications	5143
Hamilton Rentals	7205
Hamilton Services	1160
Hantarex	9128
Hardware Dynamics	9067
Hawke Electronics	9096
Hawke Computers	1176
Hestair Dataline	4160/5157/5159
Hewlett-Packard	4136/5153
Hitachi Sales UK	9015/9017
Hoskyns Group	V67/V68/V87/V88
Hytec Microsystems	2197
IAL Data Communications	2144/3143
Icarus Computer Systems	9038
ICE/Rodime	9118/9122
ICL	9056
IBM	9077
Impact Data	9036
Infodata Systems	V90
Information Desk Software	V33
Information Equipment Maintenance	9077
Informex-London	1130
Input Business Machines	3184
Insight Terminals	3210
Integrated Micro Products	1180
Intel Corp	9070
Intelligence (IRL)	V37
Interam Computer Systems	9050
Integrex	1189
Interlekt Rathbart	1116
Intermec UK	9047
International General Electric Co of New York	2150/3149
Irish Export Board	V30/V31
ISG Data Sales	2122
London Borough of Islington	1163
C. Itoh & Co	9081
JMF Computer Supplies	9051
K&N Electronics	8172
Keen Computers	3115
Kenda	4185
Kendata Peripherals	4184
Kennedy International	8166
Keyboard Training	3186
Keytronic Corp US	9039
KGM Electronics	1144
Kode	8149
Kone Instruments	3185
Lambart Computing	6184/6186
Leenshire	1140
Leeway Data Products	6198/6202
Lifeboat Associates	V41/V42
Lion Systems Developments	1151
LMR Computer Services	7181
Logica VTS	7198/8197
Logitek Computers	7144
Lucas Logic	7194
Lundy Farrington	8125/8127
Lynwood	7116
Management Control Systems	V28/V29
Mannesmann Tally	6160/7159
Master Systems	9075
MBS Rentals	8175
Mediatech	2210/3209
Mellordata/Touch Technology	9102
Mercator Business Systems	2193
Mertipower	6181
Micom-Borer	2198/3197
MicroAPL	9029/9030
Microcentre	3193
Micro Consultants	6149
Microfin Systems	9032
Micro Focus	9027
Micro Lease	4235
Micro Memory Systems	9063
Micro Peripherals	5206
Micropolis	3168
Microlax	1145
Microsystems Services	9089
Microvitec	9003
Midlectron	4194/5193
Millbank Computing	9031
Minicomputer News	9087
Mini Computer Systems	2159
Mitsubishi Electric UK	3150/4149
Mitsui Machinery Sales UK	2175
Modata	7189
Mod Tech	4214/5215
Monolith	6194
MPI Europe	9049
MSI Data International	1164
Muirhead Data Communications	1183/1185/1187
Mullard	2125
Nashua Computer Products	3125
NEC Telecommunications	1131
Newbury Data Recording	3116/4115/6122/7121
Nicolet Instruments	2136/3135
Nokia	1195/1199/1201
Norman Magnetics	3182
Norsk Data	5154/6153
Northamber	2232
Nowak Datentrager	8128
Numeric Arts	5150
Oceanic	8185
OCLI Europe	2135
Office Efficiency Machines	4132/5131
Olivetti Peripheral Equipment	1224/2225
Omicron Management Software	2130
Osborne Computer	3232/4231
Parasol	1155
Paul Corbett	1215/1217
Paxton Computers	V85
Ped Pye Electro-Devices	4139
Peerless Foam Moulding	6189
Penny & Giles Data Recorders	5122/6121
Pepperl & Fuchs	3163
Perex	3172
Pericom Data Systems	4126
Peripheral Hardware	2172/3171
Perkin-Elmer	V53
Pertec International	5172/6171
Philips Digital Recorders	9033
Phoenix Technology	7193
Plessey Microsystems	3189
Positron Computers	8193
Practical Computing	2131
Pragma	3126/4125
Prentice Hall International	7172
Priam Europe	9124
Project Office Furniture	1236
Pronto Electronic Systems	1122
Prosig Computer Consultants	V17
Protek Electronics	V23
Protocol Operations/Systems	7179
Quality Computer Systems	9025
Quest CIL	6164/7163
Qume UK	5144/6143
Rack Data	9104
Rade Systems	4158
Rair	3154
Ramtek UK	7221
Rank Xerox	3215/2214
Rapid Recall	1182/1184/2183
Rath & Strong Systems Products	V32
Real Time Development	4135
Real Time Systems	V80
Research Machines	3194/4193
Riva Terminals	2163
Russet Instruments	8153
Sarel Electronics	6193
Scicon Computer Services	7186
Scifax Microsoftware	V82/V83/V84
Selven Systems	7160
Shelton Instruments	5192/5194
Sinclair Research	5210/6205/6209
Sintrom Electronics	4171
Sintrolen Elliner	4169
Smurfit Computing	V40
Soft Option UK	V47
Software Journal	V25
Software Ltd	1207
Solar-Banner Europe	[illegible]
Sord	9108/9112/91[illegible]
Southdata	[illegible]
SPL International	[illegible]
Storton/Roxburgh	[illegible]
Summagraphics	[illegible]
Swiss Tek	[illegible]
Symbiotic	[illegible]
Symicron	[illegible]
Systems Designers	[illegible]
Systems International	V18/V[illegible]
Systime	[illegible]
Tamaya	[illegible]
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Tandon International	[illegible]
Tann-Sychronome	[illegible]
Techex	[illegible]
Technel Data Products	[illegible]
Technology for Business	[illegible]
Tektronix UK	[illegible]
Telexon	[illegible]
Terminal Systems Services	[illegible]
Thame Systems	[illegible]
Thorn EMI Brimar	[illegible]
Thorn EMI Datatech	[illegible]
Timeplex	[illegible]
Toltec Computer	[illegible]
Transam Computers	[illegible]
Transdata	[illegible]
Transtec Computers	[illegible]
Trend Communications	[illegible]
Triumph Adler UK	[illegible]
Unilever Computer Services	5218/5220/[illegible]
VAS Computer Parts & Accessories	[illegible]
Vector International	[illegible]
Vergecourt	[illegible]
Vermont Research	[illegible]
Versatec Electronics	[illegible]
Videcom	[illegible]
VNU Business Publications	[illegible]
Vossak Computer Systems	[illegible]
Volker-Craig UK	[illegible]
VSI Electronics	[illegible]
Wabash Datatech International	[illegible]
Weir Electronics	[illegible]
W & G Instruments	[illegible]
Welsh Development Agency	[illegible]
Wesper International	[illegible]
Westra Office Equipment	[illegible]
Weyfringe	[illegible]
What's New in Computing	[illegible]
Willis Computer Supplies	[illegible]
X Data	[illegible]
Xitan Systems	[illegible]
Xylogics	[illegible]
Your Computer	[illegible]
Zenith Data Systems	[illegible]
Zentec International	[illegible]
Zygal Dynamics	[illegible]

COMPEC '82

How to get there — best to go by public transport

THE local street map should help you find your way to Compec. On the opposite page is a stand plan to help find your way around once you've got there, and there is also a computerised stand guide to back this up (see adjoining story).

Once again Compec has been sold out and takes up the whole of the Grand Hall at Olympia. The stand list printed opposite was up to date as we went to press last week, but new exhibitors and changes occur right up to the day the exhibition actually opens.

Travel to Olympia is best done by public transport or taxi. A special exhibition underground service will operate for the duration of Compec from Earls Court underground station, from which there are connections to the District and Piccadilly lines, though Olympia is within walking distance from Earls Court up Warwick Road and turning left at Kensington High Street.

There are plenty of buses serving the area, although fares are a lot more expensive this year than they were last year.

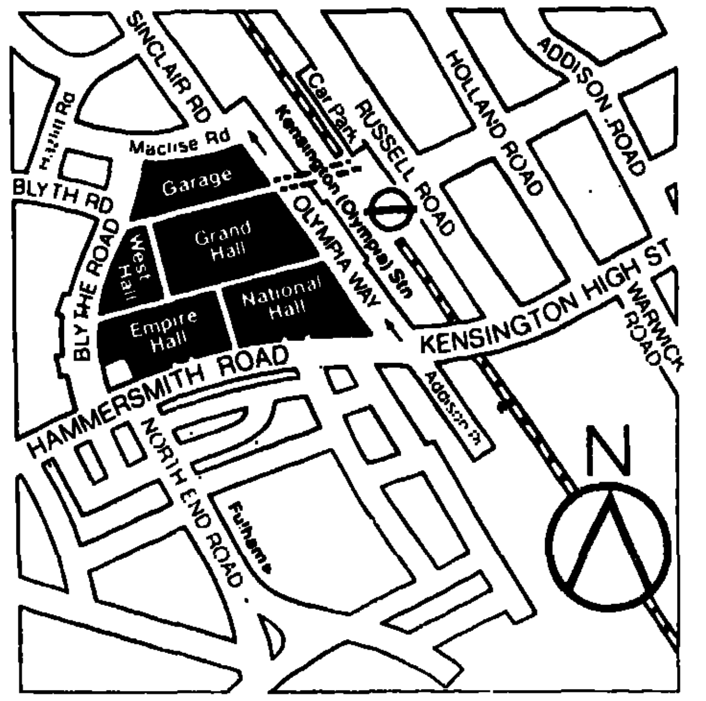
If you go by taxi, you should instruct the driver to go to the Olympia Way entrance to the Grand Hall. We would advise against going by car unless you have a friend living in the area with a spare driveway.

If you have a gambling streak or if you are prepared to queue up early in the morning, there is a National Car Parks multi-storey garage off Olympia Way. Remember there are 600 parking spaces against an estimated number of 10,000 visitors a day.

Compec opens at 10.00 each day, and closes at 18.00 on Tuesday, Wednesday and Thursday. Early closing on Friday allows exhibitors to plunge into the week-end rush-hour traffic. They are allowed to pack up at 16.30.

Catering facilities inside Olympia itself are somewhat limited but within convenient reach. There are some restaurants across the road but one would be advised to book early as they get rather full.

A short walk towards Kensington should broaden your scope.



Hands-on key to the stands

THE success of the automated stand guide at last year's Compec has led to its expansion this year, with terminals providing alternatives to video games around the Compec bars.

The £1 official catalogue provides full details of the companies and products on show. The automated stand guide offers a simple, quick reference — with no keying.

The system uses touch screens for easy access. It displays a list of product categories. The visitor touches the category he or she is interested in and the system gives a list of companies and their stand numbers.

The screens are linked to a Digital Equipment PDP-11 minicomputer.

There will be four screens around the Computer Weekly stand directly opposite the main entrance, two beside the stairs in the centre of the hall, one by the Chelsea Bar at the far end of the show on the right, one by the Vauxhall Bar on the left and another on the left at the very far end.

In the gallery there will be a terminal at the far left-hand corner from the main entrance.

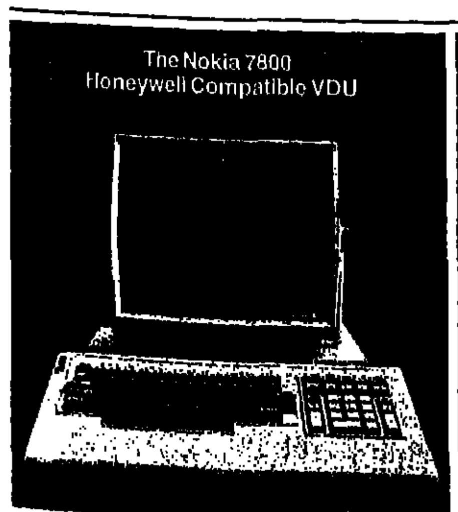
The screens are sold in the UK by Touch Technology, owned by Mellordata and Pulse Train Technology. Terminal systems company Mellordata is showing the screens on its stand.

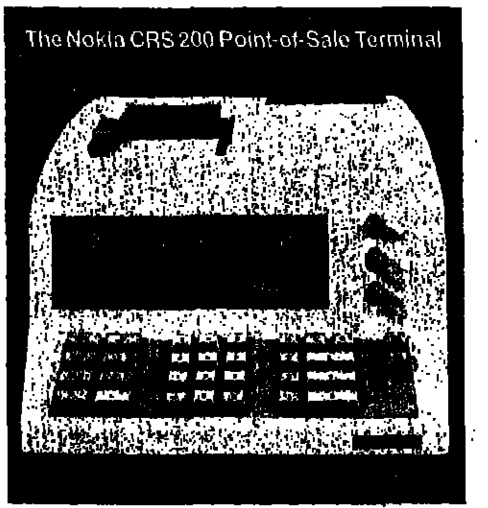
On two sides of the frame surrounding the screen are infra-red light emitters which send light across the front. When a point on the screen is touched, one or more beams in both directions are broken.

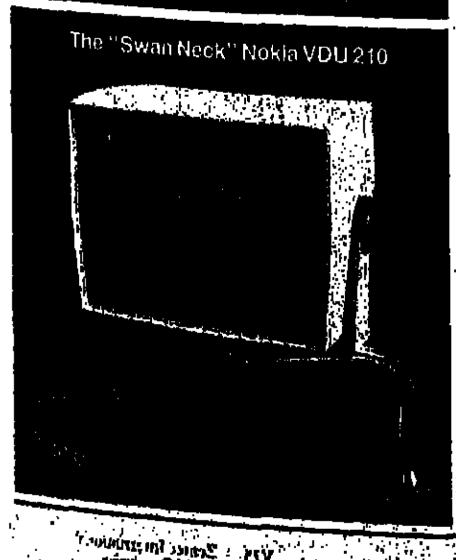
The terminal's processor works out the centre of the touch point, converts the information into the Ascii characters programmed by the user to represent that point and sends them to the host computer.

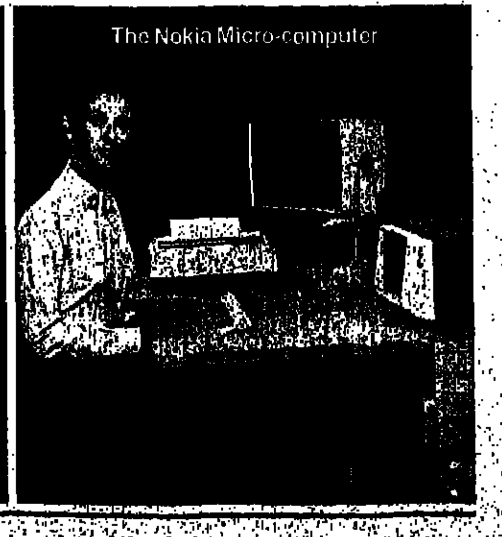
Touch Technology says the terminal's simplicity of use makes it suitable for people with no computing or typing experience. In market research, for example, touch input simplifies the instructions and speeds up the input, the company says. Input accuracy is claimed to be virtually 100 per cent.

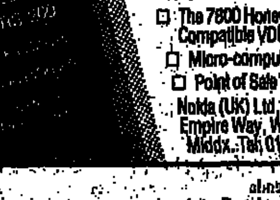
Applications range from medical patient interviewing to process control — a worker with thick protective gloves can use the device — and standard information retrieval tasks.











COMPEC '82 Exhibition Preview

The IT82 campaign has met with attacks from various quarters. David Fairbairn replies

How successful has govt been in getting the message across?

THE aims of IT82, set out in the early months of 1981, were carefully selected. The intention was to concentrate on the issue of awareness among the general public of the nature and benefits of Information Technology.

In testing, as we approach the end of the year, the extent to which the original intentions have been met, it may be useful to look in a little more detail at the main elements behind the original conception. There are four.

1. Heightening the awareness of those who are users or potential users of information technology, has been central to all that the activities of the year have set out to achieve.

There were two prongs to the attack on this issue. The first, the formal public relations and publicity campaign; the second, the series of events and activities in the year involving a large number of groups and organisations in the country.

2. To reduce the resistance to the adoption of information technology by dispelling some of the uncertainties surrounding its use and effects.

There were additionally identified other concerns that people have expressed about the adoption of the technology and in particular its impact on employment and its potential threat to the privacy of the individual.

3. To encourage the accelerated adoption of the techniques of information technology across a wide range of activities.

4. To get across the universal nature of the applications of the technology.

The tendency to regard information technology as the preserve of a limited number of computing professionals and highly skilled users needed to be counterbalanced by creating a recognition of the extent to which it is accessible and usable by people in all walks of life.

In looking at these objectives and the way in which they have been approached, it is significant to note that they are all directed at the general public, or more specifically at groups which have special needs, for instance in medicine, the arts, local government and education.

The campaign was emphatically not a supplier-dominated sales exercise. The role of the information technology industry has been an important one in helping to support the technical base of the information provided and many of the activities run, but the focus of activity has been the regional committees and the stream activities where the user voice has predominated.

When we look at what has been done so far in the year, there are three positive judgements that I believe we can make.

Firstly, measured by the sheer volume and frequency of media mentions, there has undoubtedly been a very significant increase in awareness level.

Perhaps the most impressive characteristics has been the way in which so many organisations with their roots in the local community have taken the issue to heart and have set out to do something to develop its potential on a local basis. This will undoubtedly have a long tail of impact well beyond the year itself.

The second point is that the resistance to the concept of information technology and the promotion of its wider use has been much more muted than some had expected. There has been no significant backlash.

This is perhaps surprising when one of the major issues is its impact on employment, and during the year the unemployment figures have risen to unprecedented levels.

Similarly, the "big brother" issue of privacy has not struck a chord of major concern in the public at large. The fact that the issue has been addressed by government in a White Paper, and that legislation is expected, has proved adequate reassurance to most.

Perhaps most important has been the reduction of resistance that results from unfamiliarity. Whether it is a child getting hands-on experience in a school, a visit to the mobile exhibition units funded by the Department of Industry which are expected to have reached nearly three-quarters of a million in the year, or the local demonstration of some practical application, the effect is to cause a greater willingness to accept the use of these techniques when the occasion arises.

Thirdly, it can be said that the year has proved a stimulus to new initiatives and the extension of activities which will encourage the further growth of information technology use.

We have seen the establishment of the Department of Industry Focus Committee on IT Standards, the setting up of the Alvey Committee to prepare a British response to the fifth generation challenge from Japan, the announcement of a new approach to the cabling of the country, the establishment of an Export Organisation to assist in the overseas promotion of UK technology in the field, and the DoI support of the scheme to provide training in microelectronics in schools.

Numerous awards and competitions have been initiated, many of which will continue to stimulate ideas and developments.

Having looked at the positive side of the balance sheet, it is perhaps more instructive to consider where the year has been less successful or to put it another way, where much remains to be done in the future.

A hard-headed view of the effect it has created on active use of the technology in the home, in the office or in public administration does not suggest that there has been any significant acceleration. Perhaps in view of the time lags involved it might be unreasonable to have expected so fast a response.

However, the real promise of the year's results still lies in the future and there are many barriers yet lying in the way of those who would wish to put the technology into practical use.

It has been particularly difficult to establish convincingly the real relevance of information technology in the home even though this has been a recurring theme of the year.

Although it is possible to demonstrate the possibilities that may flow from the use of Prestel and other such intelligent communicating devices in the home, this is still in such extremely limited use that the argument has to many seemed a little thin.

Equally and more seriously, the case for faster adoption of information technology in the office has not been substantially reinforced. The emphasis of demonstrations still remains heavily in the field of traditional accounting and word processing. Very few managers have been persuaded to take the step of conceding some of their desk space to an IT device.

Having stated that the year has primarily concerned itself with the general public in a number of guises, I must now make the point, that as we move towards its close, the baton has to pass to the IT industry itself.

One of the tasks which the IT Industry Stream set itself at a conference at the beginning of the year, was to develop proposals for further action which would tackle some of the industry issues.

A number of topics were addressed, including some form of overall body or organisation which might represent the industry at large, the need to take steps to accelerate the introduction and use of standards, and the need to help the UK industry in its export activities.

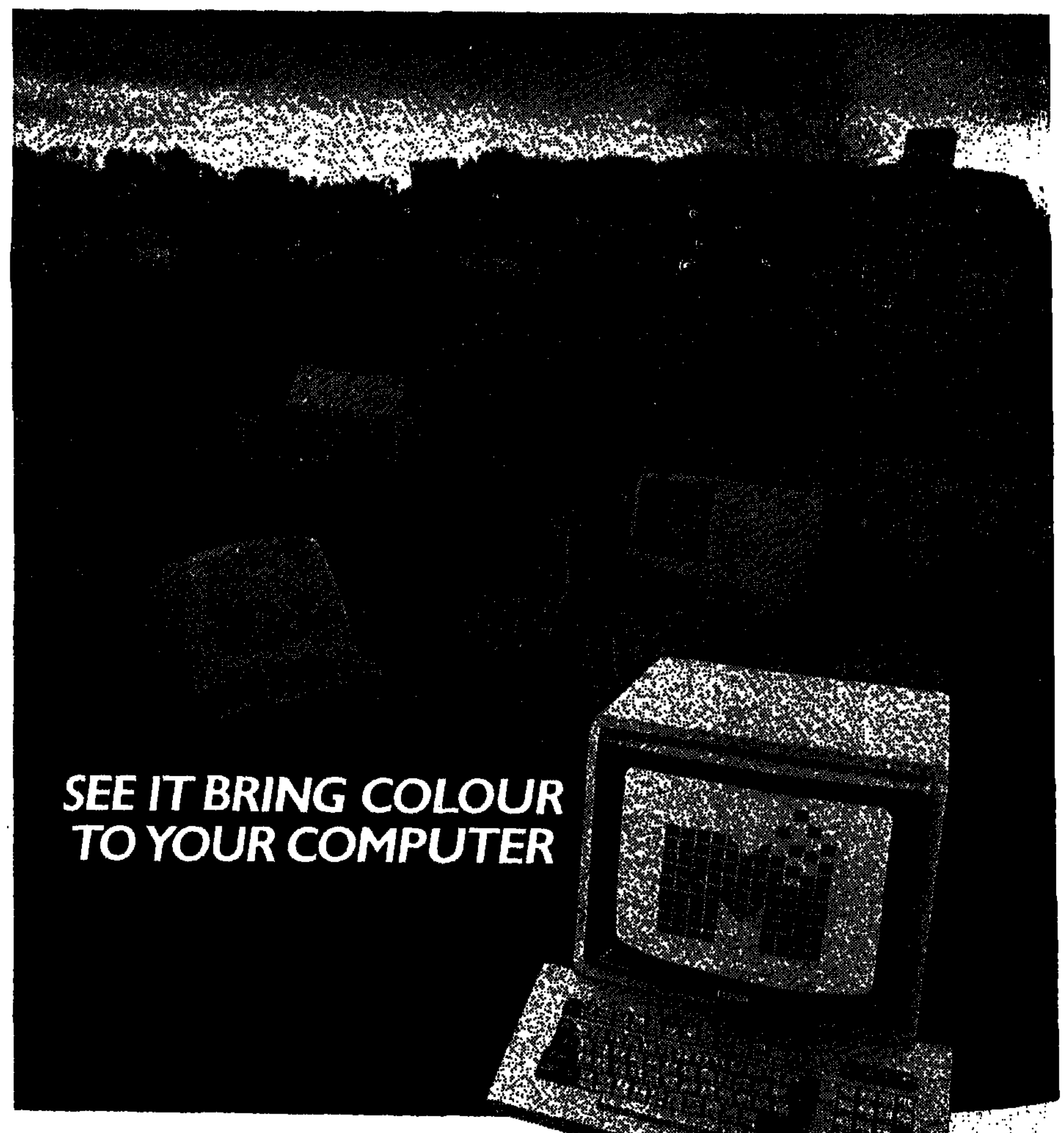
Proposals on each of these topics are now in active discussion both within the industry and with the Department of Industry and, together with the ideas that have emerged from the other streams which will be brought together at the concluding Barbican Conference, provide the basis for a continuing programme of activity.

There remains uncompleted, however, the massive task of bringing home to most people the significance of the revolution which is taking place about us.

It is in no sense to the discredit of IT82 that it has not been able to complete that task, and greatly to its credit that it has pointed to the existence and urgency of the work to be done in this field.

David Fairbairn is director of the National Computing Centre.

FAIRBAIRN . . . "Industry has difficulty in working in concert."



COMPEC '82 Exhibition Preview

The trend is to medium-sized systems, says Robert Parry

Electrifying effect of the IBM PC on the 8-bit, 16-bit market

THERE can be little doubt that in the micro world, 1982 has been the year in which 16-bit microcomputers have come to stay. Compec 82 serves to reinforce this view, with appearances from old friends and new faces, in hardware and software alike.

The semiconductor manufacturers have consolidated their microprocessor families, offering – or rather promising in most cases – ranges of compatible chips with 8-, 16-, and 32-bit external characteristics to match 16- or 32-bit interiors.

While at the up-market end Motorola seems to be making the running with its 68000, little troubled so far by newcomer National Semiconductor with its similar 16032 chip, the main trend has been towards less powerful systems using Intel's 16-bit family, well established and far outselling the Motorola and Zilog chips.

It is here, on the borderline between 8- and 16-bit systems, that the biggest impact has been made. And the reason for that impact can be summed up in three letters: IBM.

Although the personal machine from the eminence bleue – known universally as the IBM PC – is still only available unsanctioned by IBM and shipped in with voltage converter as a "grey import", its effect on the market has been electrifying.

The IBM PC has become the yardstick by which other machines are measured, and the blueprint for a whole spate of look-alike computers based on the Intel 8088 chip.

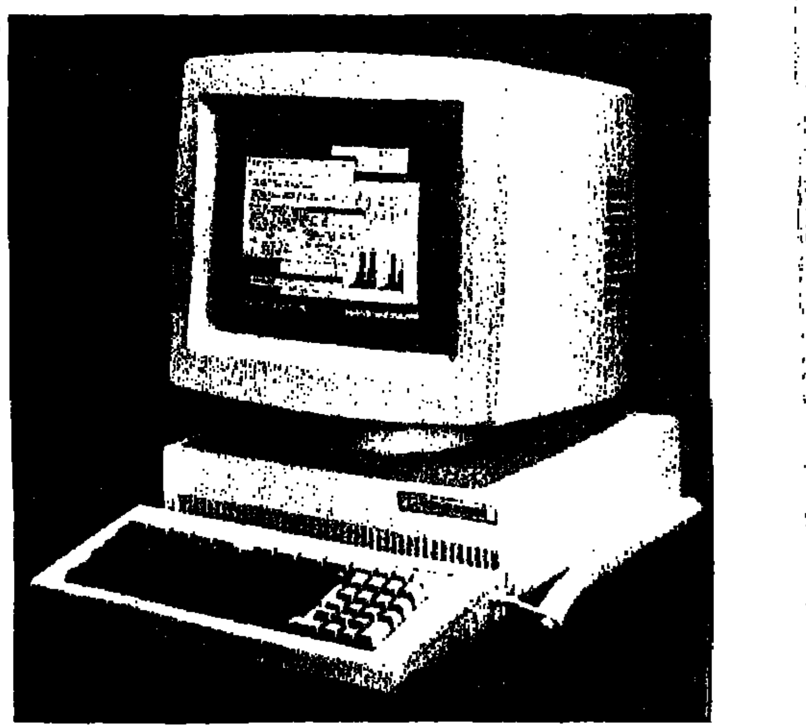
The impact has not only been in hardware. The operating system written for IBM by US software house *Microsoft* – PC-DOS to IBM, *MS-DOS* outside – is also pushing hard for general acceptance as the dominant 16-bit operating system.

Indeed, there is a new microcomputer cliché emerging to challenge the 8-bit Z80-micro-with-64K-RAM-and-running-CP/M that is seemingly universal. This new ubiquitous machine uses the Intel 8088 microprocessor, has something like 128K of RAM, and runs under MS-DOS.

One of the newcomers this year at the show is the 16-bit personal computer from Hitachi. This general-purpose machine is intended mainly for business uses. Built around the 8088, it comes with a basic 128K of RAM, expandable up to 384K, with built-in 5¼-inch floppy discs.

It has the usual interfaces to connect with CRT display, printer, light pen and RS232C devices built in, while optional interface cards can be attached to expand the system further.

A strong feature is the powerful colour graphics capability. The CRT can display text to 2,000 characters in 16 different colours, with a large capacity video RAM providing 640 by 200 dots resolution for graphics in eight out of the 16 colours. Text and graphics can be superimposed while each is being individually coloured.



The Corvus Concept "Supermicro".

The Hitachi 16000 is MS-DOS based, using enhanced Basic to provide high-level programming. Other languages availabe are Cobol, Fortran and Pascal as options, as is the Multiplan applications package.

Nearer to IBM in many ways is the Columbia Data Products PC, a 16-bit machine claimed to be altogether compatible with the IBM PC and on show from Icarus.

Operating system software is MS-DOS or CP/M-86, and the hardware configuration, based around the 8088 processor, provides 128K of RAM with parity, two RS232C serial ports, Centronics parallel printer port, twin floppy discs and a Winchester hard disc interface, and eight expansion slots as standard. IBM discs and software, as well as hardware expansion cards, are usable on the Columbia PC.

Icarus is the sole UK agent for Columbia Data Procducts, and is also a main distributor for Superbrain micros from Intertec. These will also be on show, giving Icarus its offering in the Z80, CP/M, 64K RAM arena.

Also featuring compatibility with IBM PC hardware and software is the Eagle 1600 series displayed by Wembley-based Mediatech. These machines, on show for the first time in the UK, use the 8088's bigger brother, the 16-bit 8086, running at 8 MHz. It has internal memory expandable from 128K to 256K, and again has eight expansion slots built in.

Operating systems on offer are CP/M-86, Concurrent CP/M-86, MP/M-86 and MS-DOS. Multi-user operation is catered for via two routes: the machine can directly support eight terminals, or can function as part of a network system of up to 64 stations.

Like the Hitachi machine, another Japanese 16-bit newcomer is featured by Peripheral Hardware of Solihull. PHL will be showing a new 16-bitter from Nippon-Univac, along with 8-bit machines made for Nippon-Univac and introduced in September, the TMK 64K micros.

Not all the 16-bit micros exhibited acknowledge a great debt to IBM. The top-selling machine of this type in the UK is still the ACT Sirius 1, designed by Chuck Peddle of Pet fame.

The Sirius has been around for the last year, and was recently joined by the badge-engineered Victor 9000, which forms the centrepiece of the **DRG Business Machines** stand. The Victor is again an 8088 machine, offering the choice of CP/M-86 or MS-DOS operating systems.

DRG will also be demonstrating a range of software to run on the machine, including word processing and financial spreadsheet applications VictorWriter and VictorCalc, as well as a variety of printers suitable for a wide range of micros.

If companies are not showing off fully-fledged 16-bit microcomputers, then the next best things – add-in boards extending the capacity of existing 8-bitters or dual 8-bit and 16-bit processor machines – are also around.

Zenith Data Systems is showing such a dual processor machine, the Z100. This uses the 8-bit 8085 and 16-bit 8088 processors from Intel, and is available in two versions – the ZF-100-21 and ZF-110-22 with optional green screen or colour monitor, and the ZF-120-22 with integral display.

Disc storage is expandable from 320K to 10Mbytes, and RAM from 128K to 768K. High-resolution colour graphics, and parallel and serial ports are standard on all models in this range of S100 bus systems, while IEEE interface and multi-user capability will soon be added.

The Z100 range runs under CP/M and MS-DOS (known as ZDOS in this case) which are included in the sub-£2,000 starting price. Zenith will also be showing a range of application software for the Z100s, and the 8-bit Z90s which will be on the stand too, along with printers and video monitors for both series of micros.

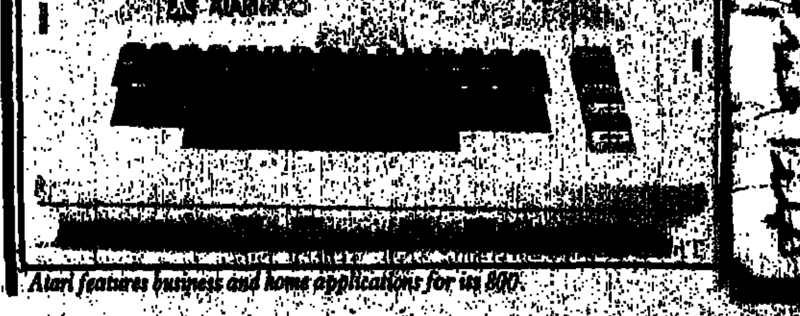
Another S100 dual 8085/8088 machine can be seen on the **Euromicro Group's** stand. The new M8/16 is featured here, along with a range of other microcomputers using Z80, 8085 and 8088 processors and the CP/M family of operating systems.

The *M8/16* allows up to six terminals to run any combination of CP/M-80 and CP/M-86 tasks simultaneously under *MP/M-86*.

An add-in board for the established North Star Advantage 8-bit micro is shown by **Interam** of Balham. This card gives a gateway to 16-bit operation under MS-DOS to the business and scientific machine.

Interam will also be showing the NorthNet local network card for the Advantage, and two computers from Morrow Designs – a Unix machine called the Decision 1 and

■ Turn to page 26



Atari features business and home applications for its 800.

MICROCOMPUTERS 2

■ From page 25

a low-cost, single-card micro, the MicroDecision.

A different approach to moving up from 8-bit to 16-bit systems is exhibited by **Encotel**. Rather than adding a 16-bit board to an 8-bit micro, the scheme with the Televideo systems on show here is to add the 16-bitter into the existing multi-user system.

The Televideo TS1600 series is again based on the Intel chip family and uses CP/M, like the earlier TS800 8-bit machines. Up to 16 workstations – of mixed kinds – can be attached to a single Winchester-based TS816.

Encotel will also be showing machines from Japanese manufacturer BMC Oki and the Superbrains from Intertec. These will include machines with integral hard discs.

Newly renamed **Five Technology** will have a new machine from Micro Five on its stand. The Series 1000 is built around the 8088 processor and is compatible with its predecessor, the Series 3000. It can be expanded from one to ten terminals and use floppy or hard disc storage.

Operating systems on offer are BOS-5 from Microproducts Software, MP/M-86 and Stardos Basic, which take advantage of the range of application packages developed for the bigger Series 3000.

Rounding up the flurry of new machines using the 8088/8086 chips are offerings from **Rair** and from **Almarc Data Systems**. The Rair micro will join its Black Box 3/30 and 3/50 systems on the stand. The Almarc newcomer, Series 16, is a multi-user 16-bit development of its present Series 8.

Another new dual processor micro is on display on the **MicroCentre** stand. This is the Cromemco C10, and uses a Z80 for CP/M operation allied to a 16-bit microprocessor for higher performance needs. But this time round it is the 68000 from Motorola giving the machine its guts.

The C10 costs £1,095 without floppies and runs standard CP/M and CDOS software. It can function as a terminal into a 68000/Z80 multi-user, multi-tasking system.

Among older friends in the 16-bit micro market, the predominance of the Intel and Motorola families of chips is again reinforced. The Intel based workstations from Convergent Technologies appear on the **Computer Technology (CTL)** stand. These can operate standalone or as part of a local network, and perform multiple functions on data, text and communications.

Networking and multi-user systems feature on **Altos'** stand. The recently launched 8600 series will get its first major public airing. Ethernet software running on networks of the full Altos 16-bit range will also be demonstrated, as will the 8-bit Series 5 and the Series 8000 systems.

Altos' two UK distributors, **Microtex and Logitek**, will also be showing these micros.

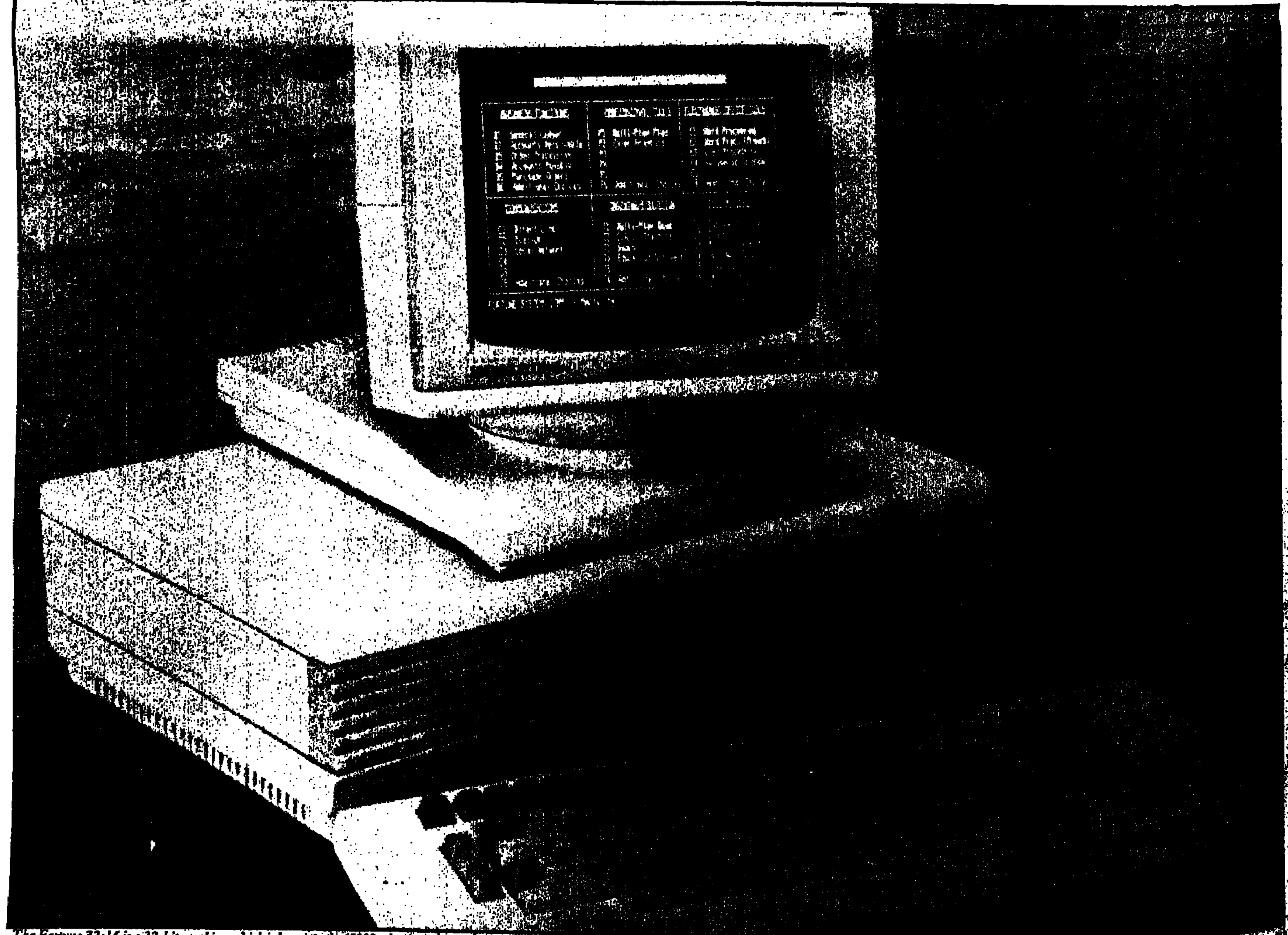
Keen will have on show its microcomputer local area networks, the Corvus Constellation and Omninet systems, as well as the Corvus Concept and Onyx Unix-based system.

Apples II and III, Concept, Pets, IBM's Personal Computer and the Sirius I are among the machines that can be connected to the Constellation network. Up to 64 micros can share peripherals. Omninet also links up to 64 machines, and provides higher data rates.

The Corvus Concept micro uses the *Motorola* 68000 chip, and features high quality word processing, bit-mapped graphics and full CP/M compatibility. Unix will soon be implemented on the Concept.

■ Turn to page 27

MD Eddie Bleasdale (right) with technical director Keith Green and the Bleasdale BDC 600/Unix.



The Fortune 32:16 is a 32-bit machine which is based on the 68000 microprocessor and runs under the Unix operating system enhanced by Fortune.

MICROCOMPUTERS 3

■ From page 26

Thame Systems will also be exhibiting the Onyx range of micros. These run Unix, Oasis, CP/M or MP/M in a single enclosure with up to 40 Mbytes of Winchester disc store. Thame will also have micros from Zilog and Rair on its stand.

A range of 68000 systems can be found on the **Alpha Micro** stand. The AM-1000 is a desktop computer supporting two terminals and a printer. It has 128K of RAM and 10 Mbytes Winchester store.

It comes with a range of software – Amos/L operating system, AlphaVue and TXTFMT, Alpha Micro's word processing software, along with AlphaBasic and over 150 routines and utilities.

The AM-1062 is suitable for user environments with large on-line data requirements. It has 512K of RAM and 60 Mbytes of Winchester storage, and can support 60 terminals.

A British-built Unix machine stars on the **Bleasdale Computer Systems** exhibit. The 16-bit BDC 600/Unix computer, based around the Zilog Z8000 chips, comes with up to three Mbytes RAM and integral 40-Mbyte Winchester – with optional floppy disc or cartridge tape streamer backup. System networking can be provided.

The last of this clutch of Unix-running 16-bitters, but by no means the least, is the **Fortune** 32:16. Again based on the 68000, and offering a range of floppy and hard disc configurations, the 32:16 can support 16 workstations, 12 of which can be in simultaneous use for word processing without reduction in system performance.

Fortune offers a wide range of application software for the machine, including its Wang-based word processing package FOR:WORD, Multiplan and Idol database management program. The development of new applications packages in a variety of languages is actively promoted by Fortune.

The new Supermicro series from Western Digital, on show from **Pronto Electronic Systems**, is a fully-fledged, 16-bit, professional desktop microcomputer, developed from the Western Digital Microengine.

The computers are based on the Western Digital Pascal Microengine chipset, and come with 128K RAM, and either 2.4 Mbytes of floppy or 1.2 Mbytes floppy and 10 to 40 Mbytes Winchester store.

Finally, a new launch combining one of the 16-bit trends, that of using the 68000, and an emerging 8-bit trend – portability. **MicroAPL** is showing its new British-built Scorpion portable APL computer.

This has up to one Mbyte of RAM, 10 Mbytes of disc and six Mbytes of tape backup, and can support five simultaneous users. It will be on show alongside other machines from MicroAPL, including its SigNet, Spectrum and Wicat machines.

Although 16-bitters are coming on strong this year, the 8-bit offerings on the market are by no means just lying back and taking it. They are fighting back.

One area almost exclusively held by 8-bit machines so far is the growing portable market. The machine that established this business market, the Osborne 1, is featured in its face-lifted form on the **Osborne Computer Corporation** stand, along with the range of business application packages that come with it as standard.

The Osborne has a five-inch screen and is portable in that it can be carried under an airline seat, and can operate from a battery pack. But it does weigh 24 pounds.

On the **Hewlett-Packard** stand will be its portable micro, the HP75C. This, more carryable at 26 ounces, has but a single line display, although external monitors and other peripherals can be attached. It runs from internal rechargeable batteries.

Other microcomputers from HP will be on the stand too, including the HP86, like the HP75C launched in September, and a new personal office computer.

It has been said that the Hewlett-Packard machine made portable micros respectable, purely because of the company's size and reputation for quality machines. If HP bothers with the market there must be something there, is the argument, which must sound encouraging to **Grundy Business Systems**. It will be showing again the NewBrain microcomputer, a much-delayed piece of equipment that has now come out into the market.

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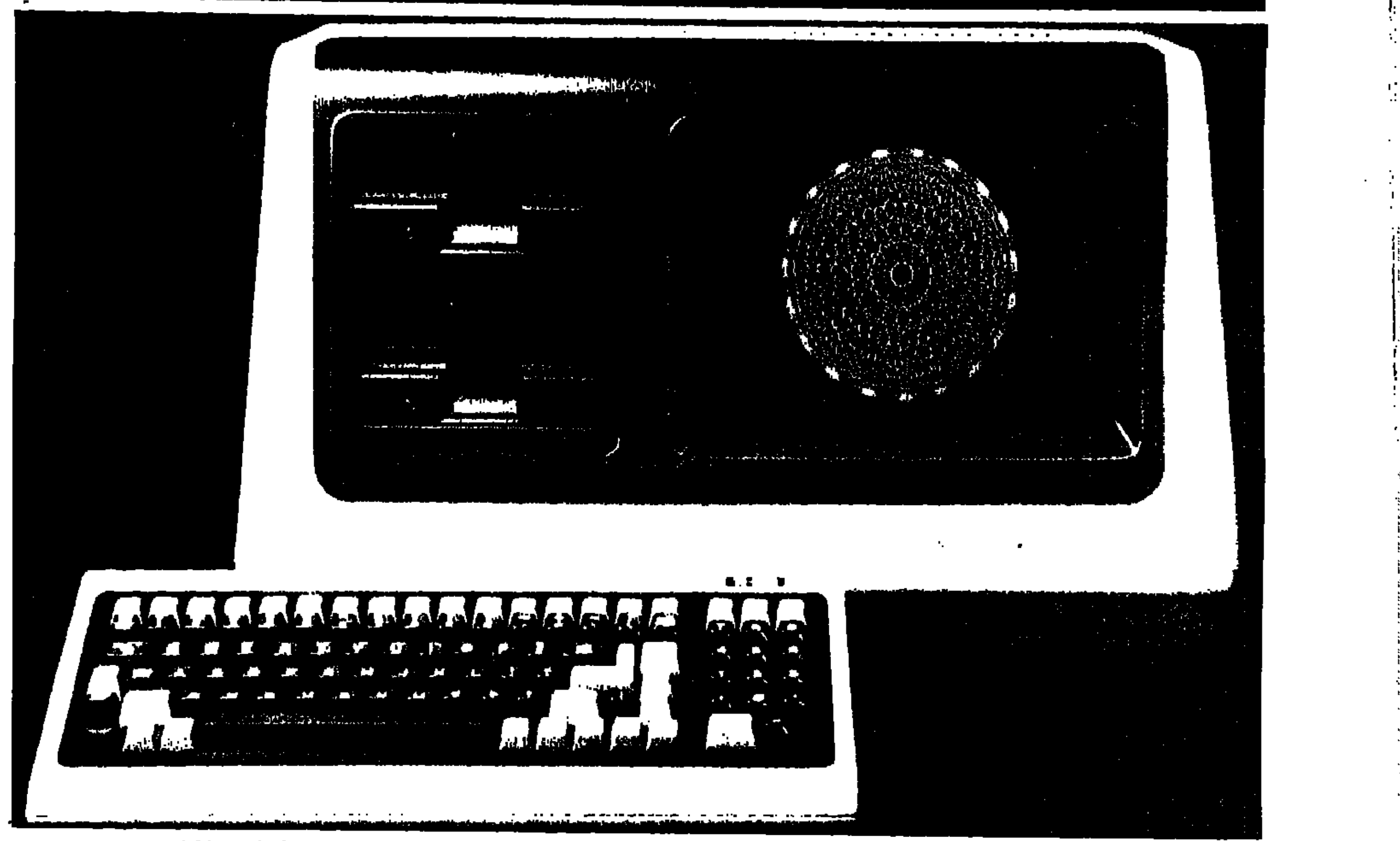
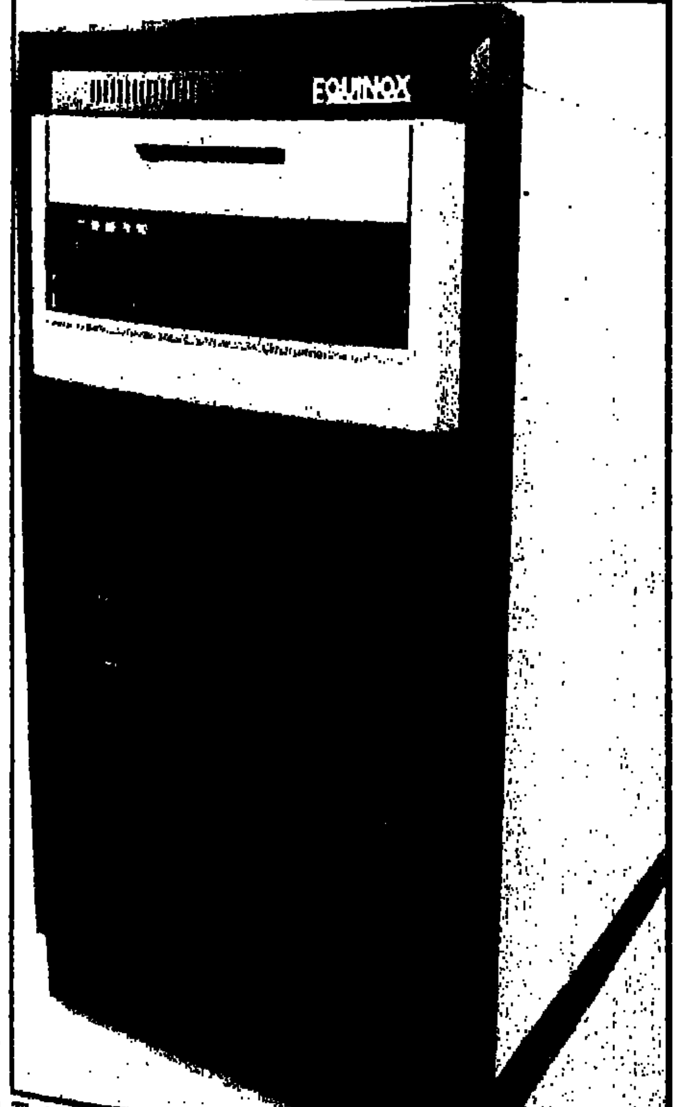
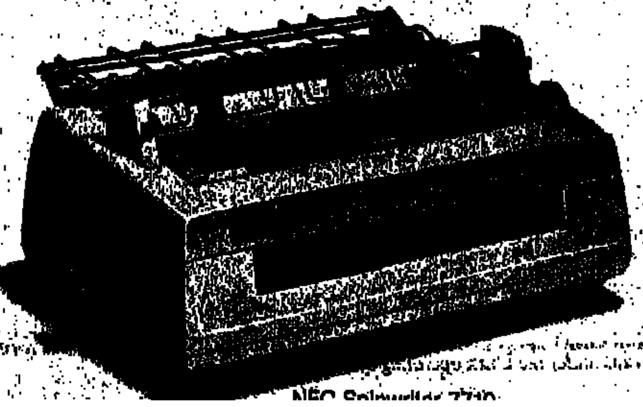


To move up from an 8-bit to a 16-bit system, this 16-bit Televideo workstation from Encotel is slotted into an existing 8-bit multi-user system



The Equinox 200 is a multi-user system with 8in floppy and Winchester hard discs, CP/M compatible and running under Turbodos.



MICROCOMPUTERS 4

■ From page 27

The machine is roughly the size of a normal typewriter keyboard, and comes with 32K RAM and 29K ROM as standard. It uses the Z80A processor. There are versions with or without a display – again a single scrollable line. Cassette recorders and 5¼-inch floppy drives to support the NewBrain will also be shown.

But in the portable area, the most interesting micro is the new one from Japanese company **Epson**. The HX20 is the size of an A4 notebook and includes its own power source, with a life of 50 hours, printer, display screen carrying four lines of text or graphic displays, and a microcassette. This is the Japanese company's first computer to be sold in the UK.

There are other ways for 8-bitters to fight back than opening up as yet unchartered territory. One that many seem to be adopting is to play on the familiarity theme. A lot of established companies are bringing out upgraded machines, for example with integral Winchester discs rather than floppies, so that the standard Z80:CP/M :64K machine becomes a bit better than it used to be, while retaining the application software base already established.

British Micro will be showing just such a Winchester-enhanced model of its Mimi 802, denoting the new member of its machine family by a W suffix. It is also showing a version of the basic 802 enhanced by the addition of 16K high-resolution graphics, programmable function keys and greater floppy capacity.

The enticements held out by **Casu** for its revamped Mini C II include a price cut by one third to £2,000 through volume production and new engineering. It comes with five I/O ports and six expansion slots as standard, giving it more multi-user potential than the mark I. MP/M II and CP/Net multi-user configurations will be demonstrated.

Staying with British micro makers, **Gemini Microcomputers** and **Quantum Computer Systems** will both be launching new versions.

Gemini is coming out with Galaxy 2 and 3, both with bigger keyboards and the Galaxy 3 with a hard disc drive, and Quantum with a colour version of its triple floppy machine, the Quantum 2000, seen in prototype last year. It will also have a hard disc version, the 3000.

Moving across the Irish Sea – and a trifle unexpectedly into the Software Village – Irish microcomputer hardware builder **Transtec** will be showing its hard and floppy machines, the HD5 and BC2. Again standard CP/M machines, using tested technology, to give users low-cost access to the range of proven package software.

Back in the UK, **Clfer Systems** has a new factory on-stream in Wiltshire and is showing new and established micro products. These include a member of the Series I microcomputer family, the 1887, with in-built Winchester and floppy drives.

Options exist for graphics display, 256K user memory, IEEE 488 and RS485 interfaces and 48 Mbytes of disc store through add-on units.

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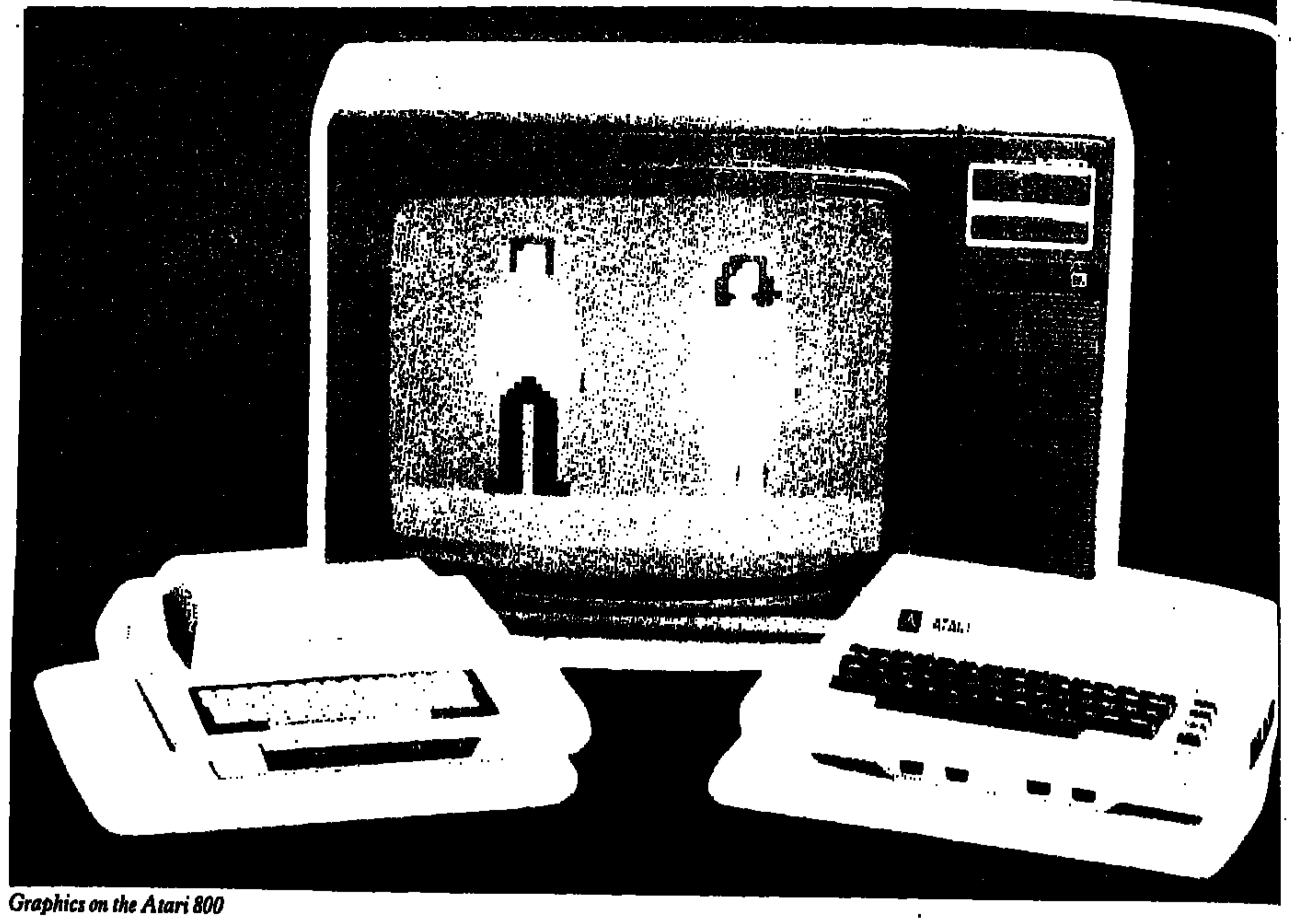
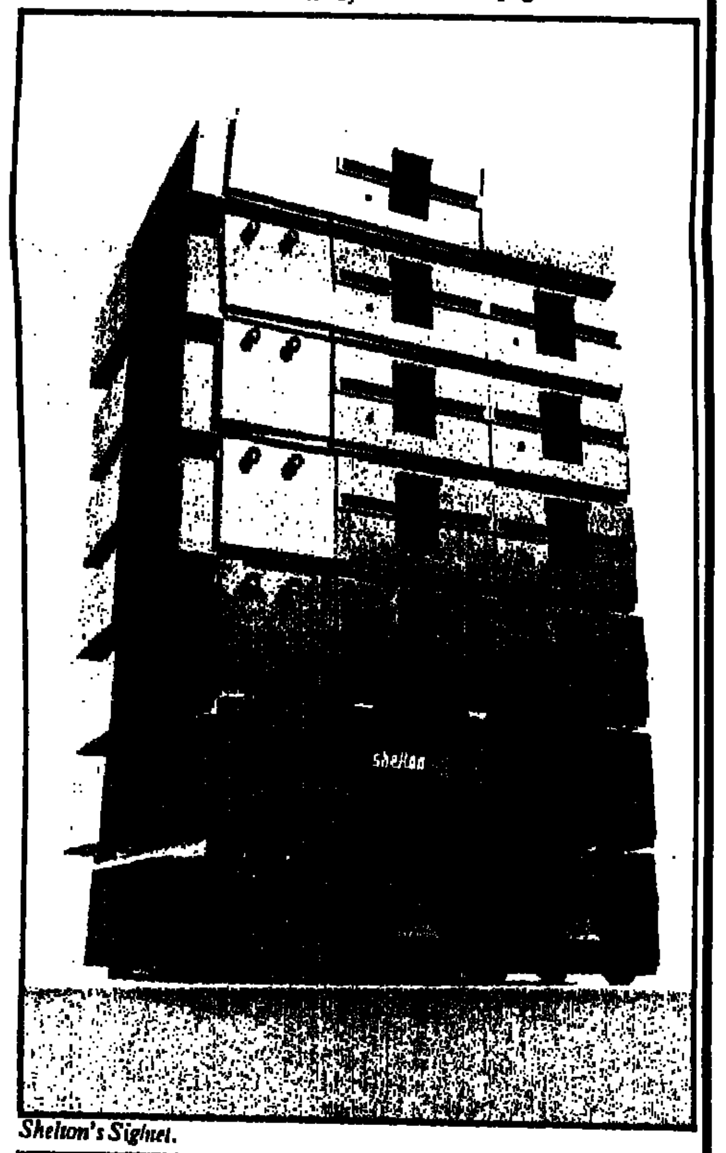
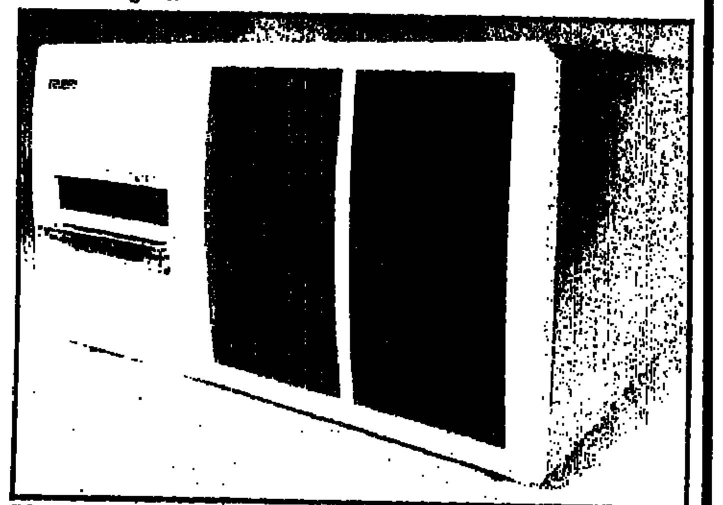


Graphics on the Atari 800

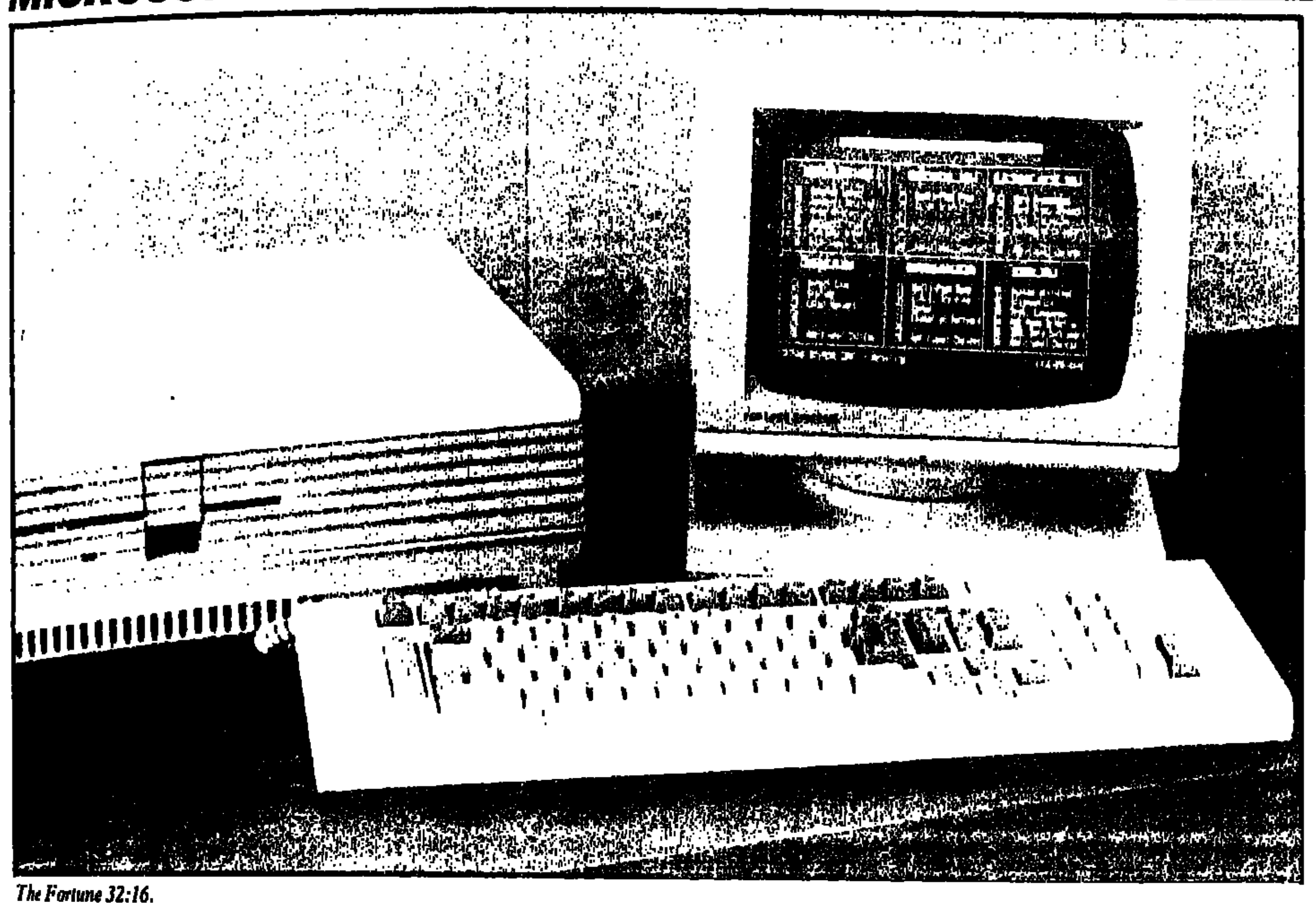


Shelton's Signet.



The Equinox 5000SX is CP/M, MP/M and Turbodos compatible. It has multi-user, multi-processor capability and is Z80A-based.

MICROCOMPUTERS 5



The Fortune 32:16.

■ From page 28

There are, of course, some micros coming into this field without the help of forerunners. One such range is the Crystal range range from **Comcen Technology**. These are Winchester-based S100 bus machines.

The main model is the Crystal 8, with a five-Mbyte hard disc and a standard eight-inch floppy for back-up and program transfer. The Crystal 4, a Z80 unit with twin eight-inch floppies and Comcen's Winchester subsystem, is also featured.

Other ways to stand out from the crowd of similar machines have been used. **Triumph Adler** seems to go for more than just the CP/M operating system, offering also the UCSD p-system on its Alphatronic upgrade, the P3.

It also promises Winchester discs and 16-bit capability through an add-on board for the P4, announced along with the P3 last month.

British manufacturer **Equinox** also goes part of this route with its new Equator. This is a self-contained desktop system complete with integral screen, keyboard, floppy and hard discs, and runs under CP/M, Turbodos or MicroCobol. It can support up to four users.

Equinox will also be showing other models in its established ranges of 8-bit and 16-bit micros, based on the S100 bus and capable of multi-user, multi-processor operation. A 68000 system for scientific applications will make its debut.

The other main tack taken to ginger up the 8-bit market is to link lots of the beasts together. **Transdata** will be showing its new high performance multi-user business system, which claims faster response times than normal LANs. Each of up to 16 users has his own Z80 processor and memory, sharing a common high-speed bus.

There is a dual access method for files – private files are accessed directly, and so quickly, while shared files are accessed through the multi-user operating system. Passwords are used to give security and confidentiality. Cache buffering further enhances disc I/O performance. Winchester disc storage can range from 10 to 35 Mbytes.

A similar sort of approach can be seen from **Shelton Intruments**, which is launching the Sig/net 2 modular system. Trays carrying twin floppy drives or one floppy and a Winchester, can be stacked up, each one serving up to three users. Workstations attached to these trays each have 64K of RAM and a processor.

A single-user workstation runs CP/M, while the multi-user stacks run either under MP/M and CP/NOS, or under Shelton's own CP/M-compatible multi-user operating system McNOS. This allows single-user software and data to be retained when moving to a multi-user environment.

Digico is showing a system with micros clustered around a Winchester. This is the 3800 series. It will also have the Prince II, with a Winchester inbuilt, and the Prince 15, a model without storage capable of remote processing at terminal level.

Lest you think that networking is the domain of business machines only, **Acorn Computers** will be featuring a large number of its BBC microcomputers linked through its Econet. This will demonstrate the use of shared peripherals, like the Olivetti dry-ink jet printer and the BBC machine's new dual disc drives.

Acorn is also showing for the first time two second-processor options: a 6502 to increase power and speed, and a Z80 to give CP/M operation.

If the sight of all these micros, and the many Apples, Commodores, IBM PCs even, scattered around in various guises, predominantly being pushed at business users is just too much, never fear. **Sinclair Research** has a stand showing its Spectrum and ZX81 models, and the relative newcomer to the home/hobby marketplace, the Dragon 32, is on show at Micro Peripherals' stand. Atari has a stand too, but there the emphasis is on software.

This preview of microcomputers has concentrated so far on new hardware offerings, perhaps inevitable given the nature of an event like Compec. But the software for the machines should not be ignored altogether.

Hardware manufacturers **Atari** and **Apple** both place most emphasis on new software for their established computer lines.

Atari features business and home computer applications for its 400 and 800 models, while Apple concentrates on networking and communications for its Apple IIs and IIIs.

Apple will be showing a Zynar net like the one it is about to install in its own offices. There will also be various communications and business application packages for the Apple III on show.

Then there are a clutch of firms offering application packages, mainly general business and financial applications, for Apples. These include **Vergecourt**, with an extended Visicalc board for the Apple II which incorporates the new features found on the Apple III advanced version of Visicalc

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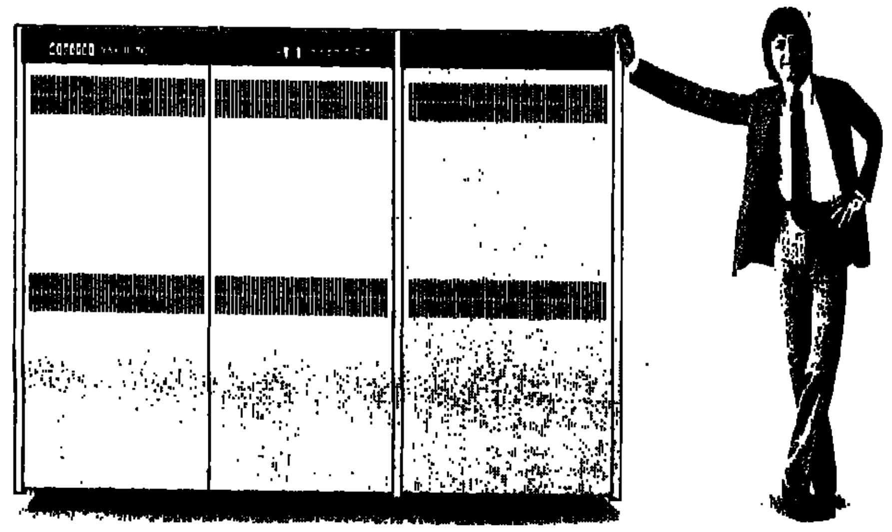
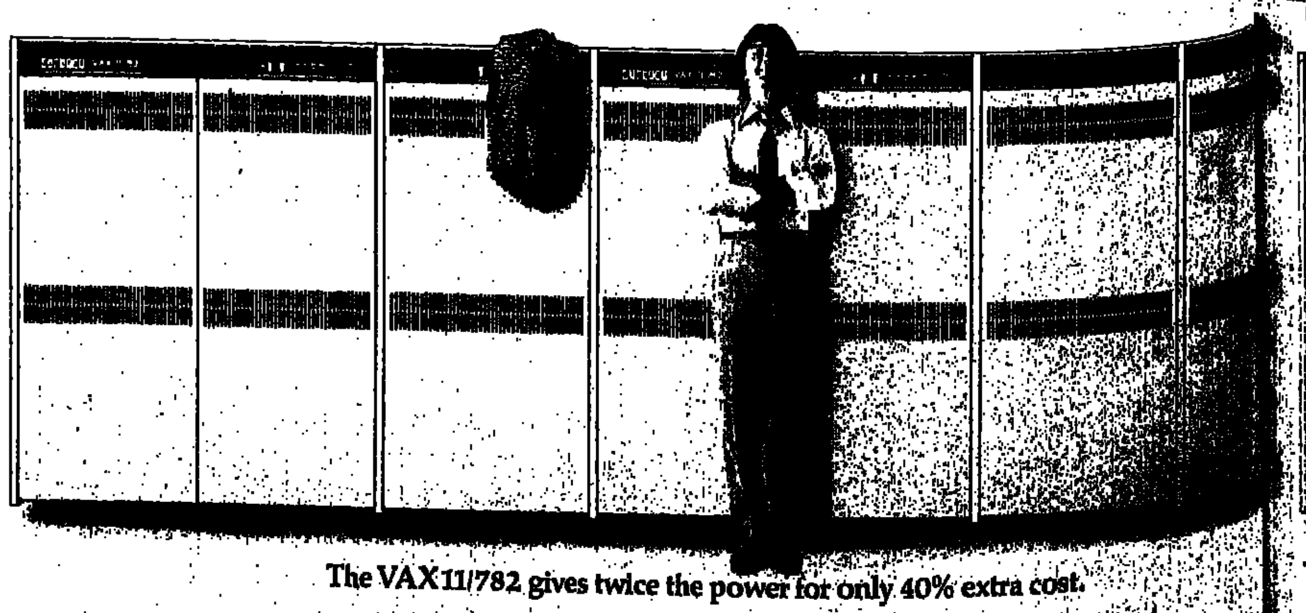
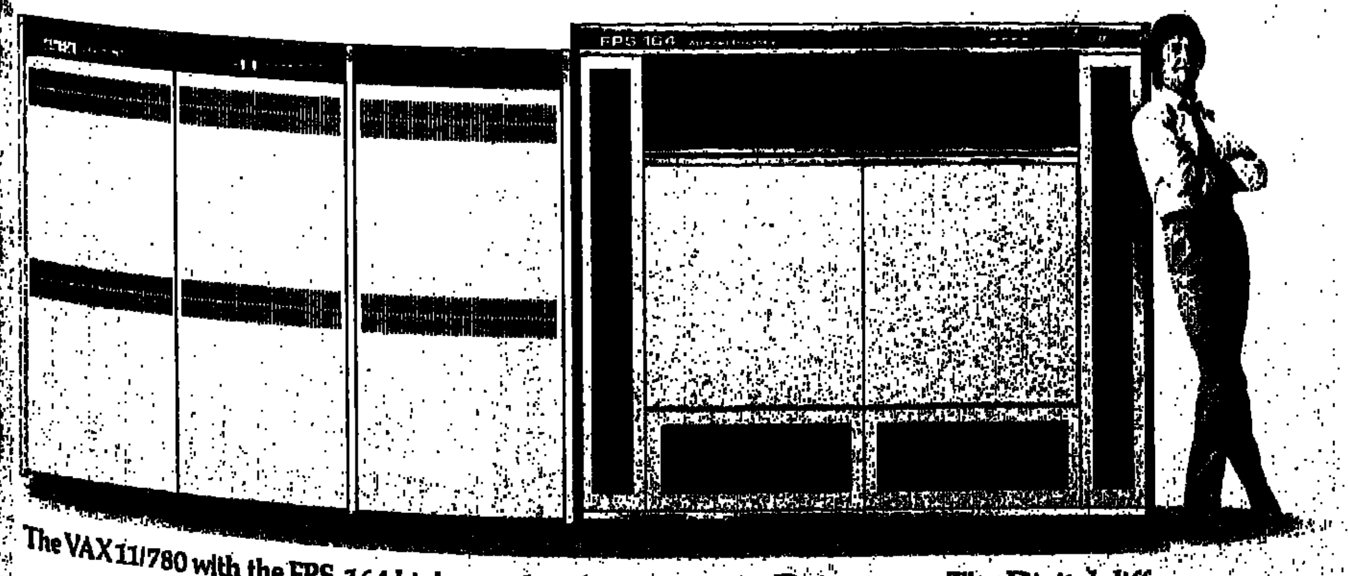
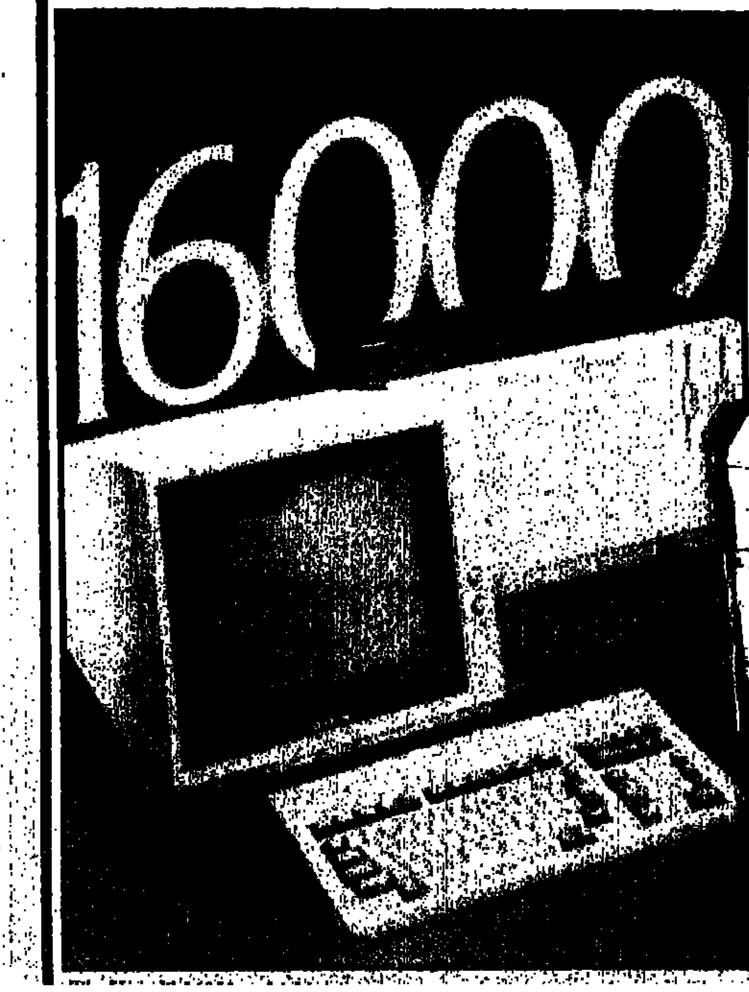
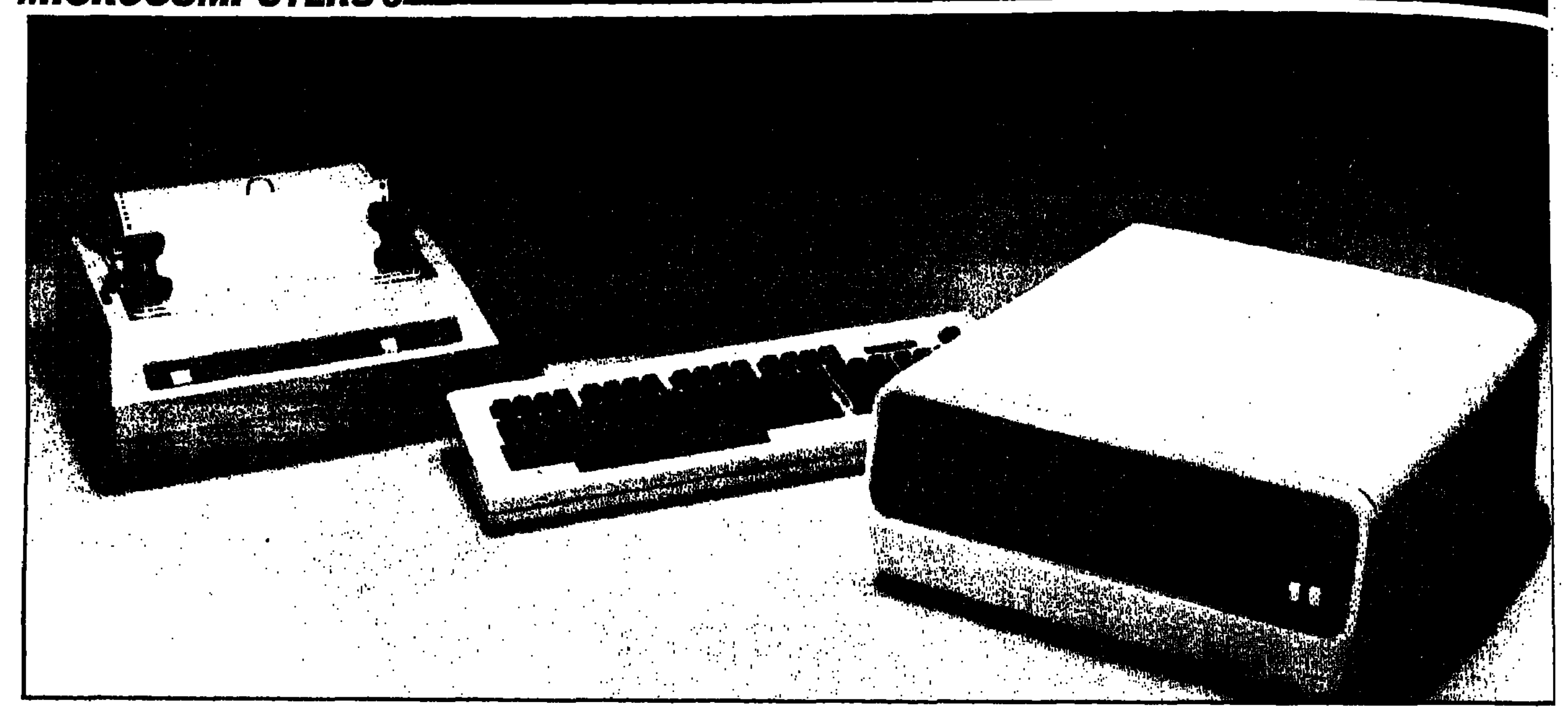


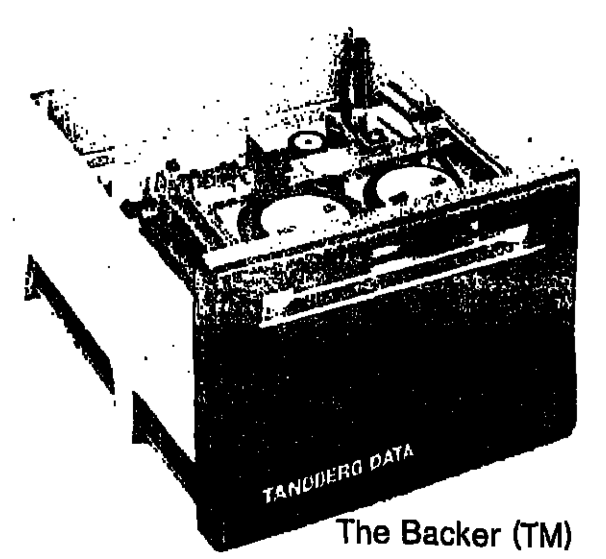








The Micro Five Series 1000 is built around the 8088 processor, can be expanded from one to ten terminals and use floppy or hard discs. It runs under BOS-5, MP/M-86 and Stardos Basic.



■ From page 29

from Visicorp, Computech, Great Northern Software and Information Desk Software.

Great Northern Software's offering include a financial modelling system, database package, general business packages, and a new automatic mailing system called Mailflow. **Information Desk's** range includes ledgers, stock control and incomplete records. As well as being offered on Apples, Information Desk's line of packages is also sold for DEC and CP/M machines.

Moving into CP/M software opens up a wide range of suppliers. These range from the distributor of CP/M originator Digital Research, **Xitan Systems**, with a range of offerings on the system software side, and **Tamsys**, also a Digital Research distributor with languages and applications packages like MDBS III database management, to the numerous application package vendors.

Among these are **Soft Option**, with eight and 16-bit languages and general business applications, **Mediatech, Lifeboat Associates, Kenda, Derwent Data Systems, Omicron, Software Limited** and **Southdata**. Most of these are showing similar sorts of ranges of accounting, word processing, ledger and other such general business packages.

Southdata is showing its data storage software Superfile, which differs from conventional database management packages in its break from traditional mainframe methods.

Superfile is written in Z80 assembler, and is a 128K extension to CP/M, though all software running under CP/M 2.2 also runs under Superfile. It has a "sounds like" searching facility to match items known hazily.

In the area of micro database systems there are other offerings around, from **Equinox** for example. It is showing Dataflex, a package available on its 8-bit and 16-bit machines.

Paxton is showing its Business Desk and Sales Desk suites, written in CIS Cobol and implemented on a range of hardware, including some CP/M machines.

More on the system software side there are varied offerings from **Real Time Systems**, with Pascal and C compilers and cross-compilers to run under its Unix derivative Idris, as well as Xenix and RT-II.

Other Unix-based software can be seen on the stand of **Atlantic Software**, a subsidiary of [illegible] Computers. Most of its [illegible] are built on demand for [illegible] communications and [illegible] formation systems.

If it is slightly less usual [illegible] guages than common or [illegible] Basic, or Pascal, that you are [illegible] then there are some to tempt [illegible] **Micro Focus** will be there [illegible] CIS Cobol, **MicroAPL** with [illegible] for a variety of microcomp[illegible] **Computer Solutions** [illegible] polyForth and **Lifeboat** [illegible] ciates with Timin Forth, and [illegible] fax with a new computing [illegible] called Trojan.

Other information manag[illegible] systems may be seen from [illegible] **data Systems**, with its FMS, [illegible] from **Graffcom**, which has [illegible] formation management system [illegible] part of its office products.

The British-built BDC 600/Unix from Bleasdale Computer Systems is based on the Zilog Z8000 and comes up with three Mbytes RAM and integral [illegible] Mbyte Winchester.

Mark Wenek describes the attack on both market ends

Minimakers perform a two-way stretch to fight the encroachers

SINCE Compec 81, minicomputers have found themselves labouring under something of an identity crisis.

During the last few years the distinction between mini- and microcomputers has become increasingly hazy. Micros have been getting more and more powerful, giving rise to the term "supermicro", and they have been eating into the bottom end of the mini market.

The key here is price. "Minicomputer performance at a microcomputer price" has been the supermicro vendor's favourite slogan.

In 1982, minicomputer makers have been turning defence into attack. Some have merely lowered their prices, while others, notably DEC, have plunged into the microcomputer market.

Instead of fighting a rearguard action against the encroachment of supermicros, mini makers have in turn focused their efforts at eating into the mainframe market.

This two-way stretch has left minis in something of a void. After being the belle of the ball at the beginning of the last decade, the mini has recently become something of a black sheep.

Or at least, so pundits would have it. Compec 82 shows that the old faithful minicomputer is still a *force* to be reckoned with, while *losing* out in the hype stakes, minicomputer sales remain healthy.

Though the **Digital Equipment Corp (DEC)** stand at this year's Compec highlights the US Company's "year of the micro", DEC minis are also out in force.

Pride of place will go to the new VAX-11/730 which was announced in the spring. The machine is the entry-level model of the VAX family of 32-bit, virtual memory computers.

According to DEC, the system gives 30% of the performance of the large VAX-11/780 at 20% of the price (£28,000). The 730 is software-compatible with the 780 and the mid-range 750 and uses the new Version 3 of the VAX/VMS operating system.

New semiconductor memory in VAX-11/730s uses 64K chips, four times the density of previously available memory. This allows a megabyte of memory to go onto a single array card giving greater memory capacity.

DEC will also be showing VAX-11 C, an optimising compiler, and enhancements of VAX-11 Cobol, VAX-11 Fortran, and the VAX-11 Common Data Dictionary, with emphasis on programmer friendliness and easier access to database information.

The trusty PDP-11, which has held its form since its introduction in the last decade, is fighting back against the low-cost, high performance micro. The Micro/PDP-11, introduced this summer, will be on the stand.

The Micro/PDP is a compact, low-cost system based on the PDP-11/23-Plus CPU, combining CPU, memory, 10.8 megabytes of storage and controllers.

Running standard PDP-11 operating systems such as RSTS and DSM-11, the model is a general-purpose system mainly for OEMs.

Eric Rein, DEC's Micro/PDP-11 manager, said: "This system fills the space between DEC's personal computers and our larger, more expandable PDP-11 minicomputer products.

"Despite being small, it can handle complex tasks in multitasking environments because of its ability to run sophisticated software."

Another boost for DEC OEMs, the Micro/J-11 processor, will be shown. Launched this summer, the device is a 16-bit/32-bit microprocessor made in CMOS technology.

The processor has the full PDP-11 instruction set and a memory management unit that can address up to four megabytes of memory.

DEC's arch-rival **Data General** places the emphasis on office automation and superminis. The highlight of DG's exhibition will be the launch of a new 32-bit minicomputer, an addition to the MV range.

DG is playing the launch very close to its chest, as are several other mini makers, hoping to draw punters to its stand with the surprise factor.

The bulk of DG's stand will be taken up with CEO (Comprehensive Electronic Office) which was the company's surprise package at Compec 81.

CEO integrates office automation and DP functions and is based on the company's Eclipse and MV systems. Operating under DG's AOS and AOS/VS operating systems, CEO is compatible with all of DG's distributed data processing products, including SNA-compatible communication and X25 networking.

Since CEO's appearance almost exactly a year ago DG has shipped two entire systems, both to major UK multinationals. With entry-level price hovering around the £200,000 mark the company is satisfied with its performance.

The company has also sold individual items from within the system, such as Dasher workstations, CEO word processing packages, and other software packages such as Present and Trendview which operate on Eclipse and MV Family systems.

All will be on view at Compec 82.

Hertfordshire-based **GEC Computers** is also keeping things under its hat until Compec week. According to a spokesman: "GEC will be launching a new baby somewhere in the grey area between micros and minis and costing between £10,000 and £15,000.

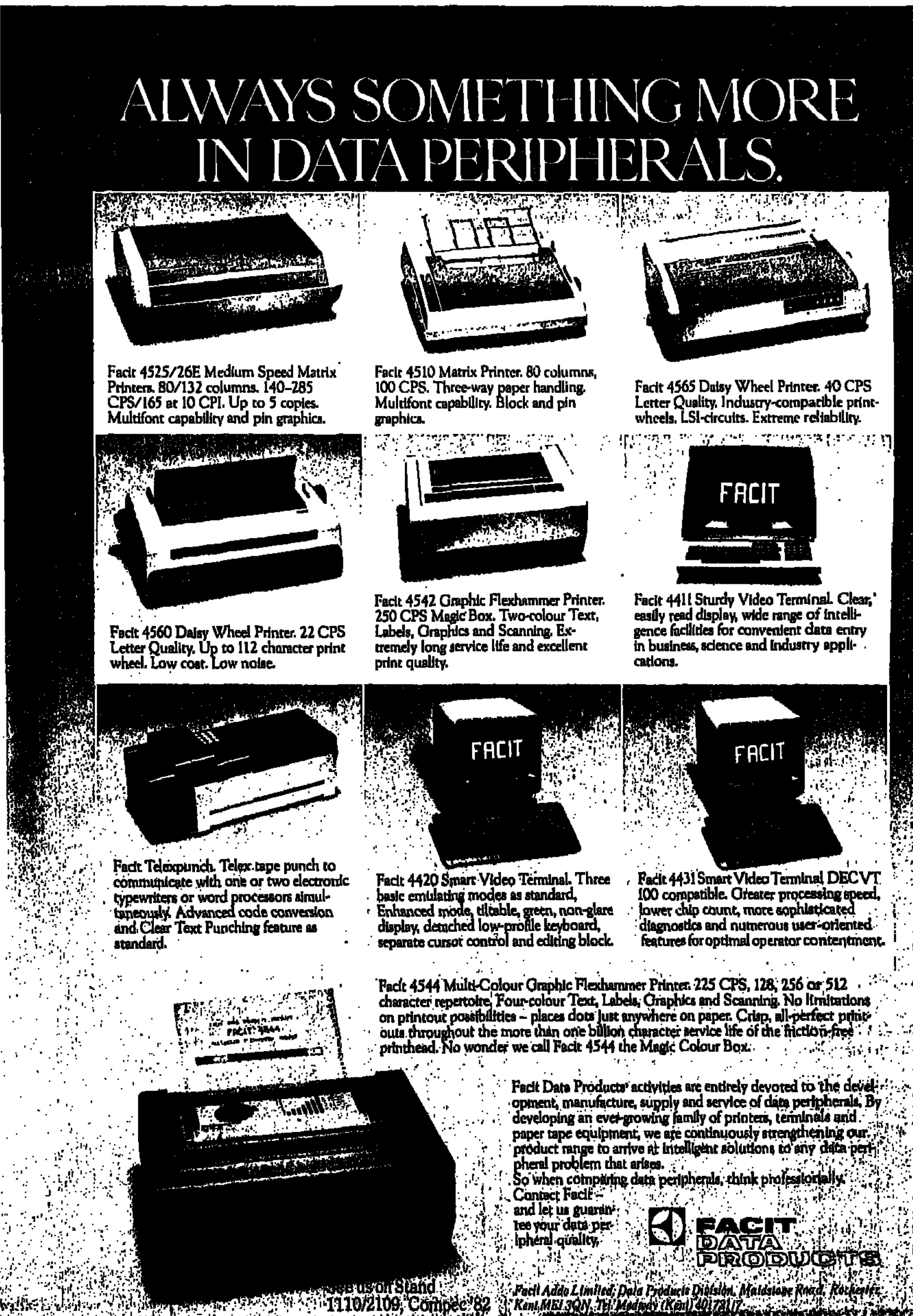
"GEC has never been strong in the commercial area and we intend to put that straight with this small business system."

Also on display at GEC's stand will be the 4000 minis, with all their associations with Prestel. They will include the GEC 4190 32-bit minicomputer which made its first appearance at Compec North in June.

General Automation's stand will be featuring two recently an-

■ Turn to page 32

Hewlett-Packard's HP 1000 with its new vector instruction set inverts a 100 x 100 matrix in 12.22 sec.



MINICOMPUTERS 2

The new DEC-VAX-11/730 is said to give 30% of the performance of this large 780, at 20% of the price.

■ From page 31

nounced systems—the Interactor and the GA900 series.

The Interactor is a 16-bit minicomputer running under the Pick operating system. It is a particularly interesting bit of hardware in that it has been designed specifically to run Pick under the aegis of Richard Pick himself.

Interactor will be demonstrating financial and application packages, manufacturing and resource planning software and a database generator.

The GA900 series is the latest member of GA's Solution and Boss computer families.

Launched in May, the Series 900 is aimed at the industrial automation and commercial systems marketplace. It runs with GA's control operating system and is software and peripheral compatible with previous generations, of which there are some 30,000 units installed worldwide according to GA.

The 900 Series are 16-bit general-purpose machines. Features include bit-slice processing and optional cache memory.

Scandinavian outfit **Norsk Data** chooses Compec 82 for the UK launch of a new mid-range minicomputer system. Designed and manufactured in Norway, the ND-100/CX is a 16-bit, real time system with batch processing facilities, primarily designed for commercial and administrative applications.

Norsk Data claims to have enhanced the multi-user performance of the new system through the latest microcoding techniques and Cosmos, an improved networking system.

The machine has two kilobytes of cache memory and a memory management system allowing high-speed semiconductor main memory to expand up to 32 megabytes.

Running under ND's proprietary Sintran operating system the user can build up networks of 16-bit and 32-bit computers combined.

Languages available include Cobol, RPG, Fortran and Basic, and the company will also be demonstrating a range of high-level software tools grouped under the title Orbis.

The company will also take the opportunity to show its foray into the supermini area with its ND-540 32-bit machine.

One of the ND-500 range launched in the UK in February, the ND-540 has a Whetstone performance of 1,750 kips, making it 50% faster than the Dec VAX-11/780, the company claims.

Cost of a basic system starts at around £100,000, and main uses are expected to be in simulation, CAD, geophysics and other scientific and technical areas.

Finally, ND will display its 16-bit Satellite workstation for use in distributed systems or as "embedded' machines in dedicated environments.

Continuing the minicomputer's foray into the world of the mainframe is **Gould SEL** with its newest and most powerful supermini, the Gould Concept 32/87.

A spokesman for Gould said: "The 32/87 is more than five times faster than any closely priced competitor and achieves its extraordinary processing power from a combination of parallel processors with high-speed ECL (emitter coupled logic) technology."

In the 32/87, the CPU and IPU (internal processing unit) work together to process two different instruction streams simultaneously. Both processors have their own floating point hardware and high-speed 10,000 series ECL technology chips.

The 32/87 has 32K of 75-nanosecond cache memory in both CPU and IPU.

Gould will also be demonstrating its Concept 32/27 system, which features the industry's first 32-bit CPU on a single-slot plug-in module, the company claims.

Both machines will run Dats, a signal acquisition, analysis and graphic presentation software package from Prosig Computer Consultants of Hampshire.

Hewlett-Packard comes to Compec 82 with the theme "Small is Beautiful". As well as launching a new micro, HP will use Compec 82 to launch a desktop minicomputer.

HP is jealously guarding the details of its launches, but the mini is to be aimed at scientific and engineering applications.

Of its existing products, HP will be showing its HP 1000A series launched early this year under the trusty "Minicomputer speed, microcomputer price" slogan.

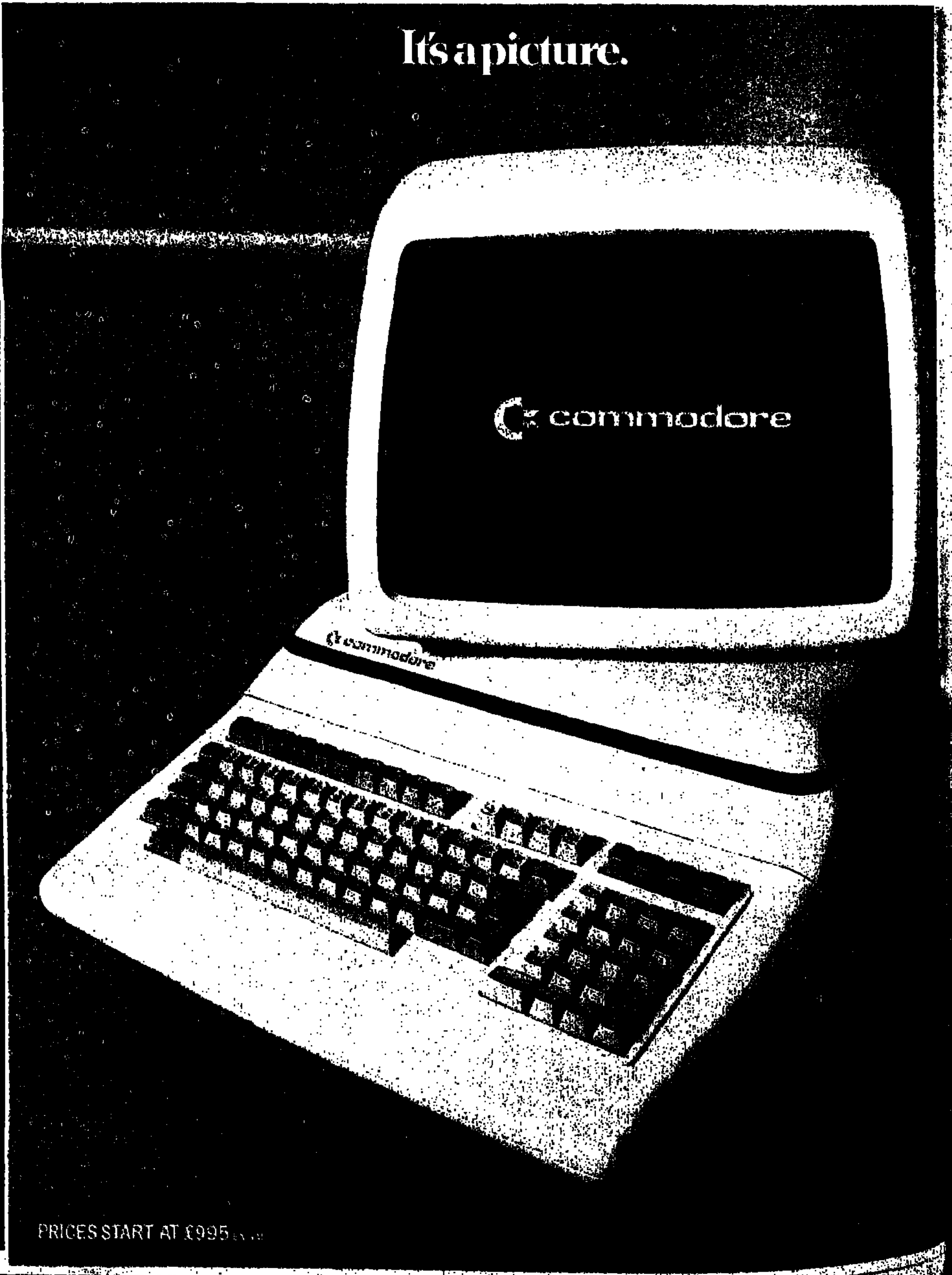
The HP 1000A-Series consists of the A600, a micro, and the A700, a minicomputer which begins with the same configuration as its smaller partner and has add-ons that make it a true mini.

Aimed at OEMs, in-house system designers and software suppliers, the A700 uses HP's RTE-A.1 operating system, a real time, multi-user, multi-tasking system. It supports programming in Pascal, Fortran 77, Real Time basic and Macro/1000 assembly languages.

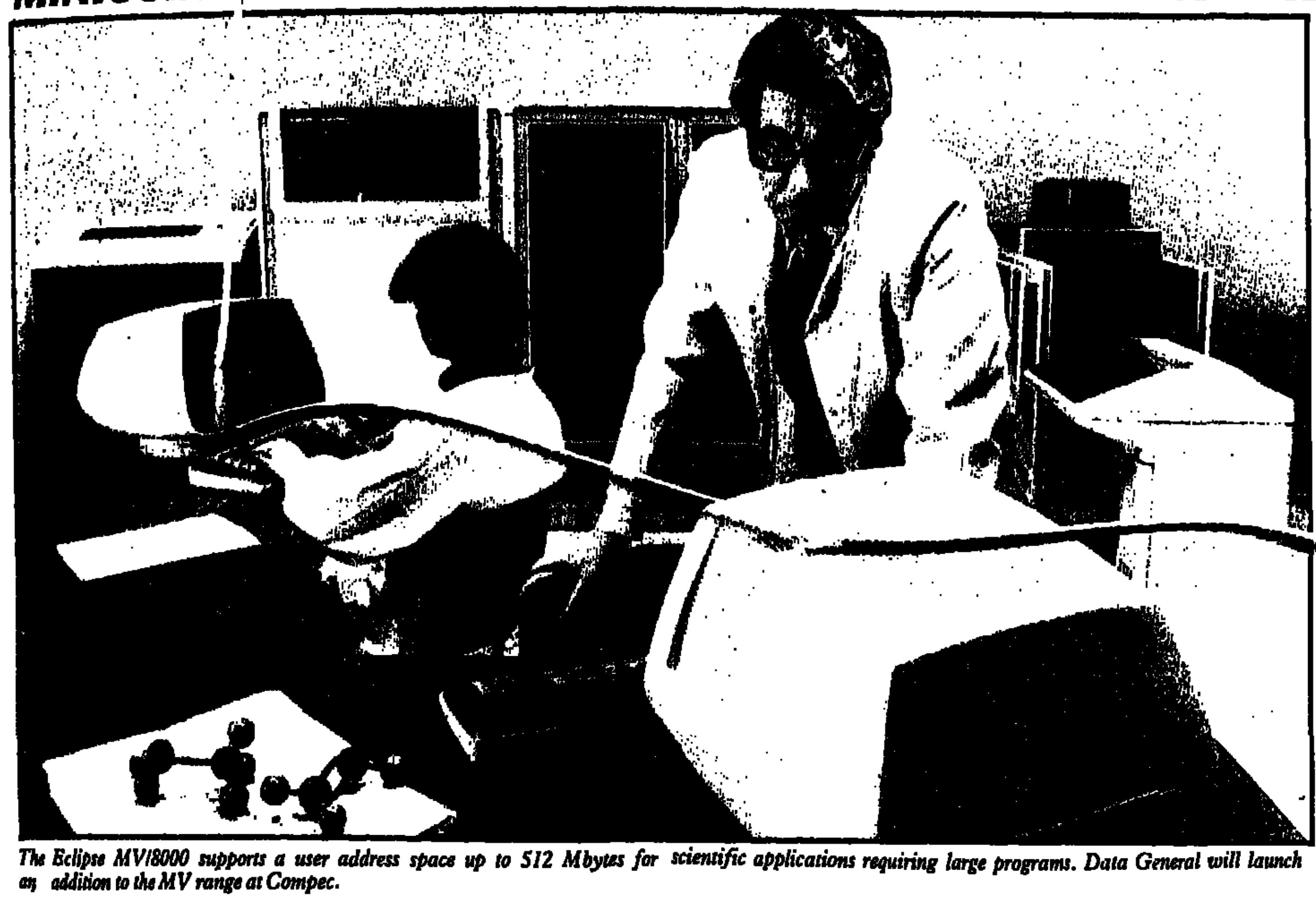
The A700 is microprogrammable, combining a floating point processor with scientific and vector instruction sets to perform between 200,000 and 430,000 floating point operations per second.

Also on show will be DS/1000-

■ Turn to page 33



MINICOMPUTERS 3



The Eclipse MV/8000 supports a user address space up to 512 Mbytes for scientific applications requiring large programs. Data General will launch an addition to the MV range at Compec.

■ From page 32

IV computer networking which enables A-Series systems to be linked with other HP 1000 machines or to HP 3000 systems.

Britian's second largest computer company, Leeds-based **Systime**, will show a mixture of its VAX-based and own make systems.

On the stand will be a Systime 8750, based on DEC's VAX, with matrix printer and six VDUs. In addition there will be Systime's S500 series small business computer, and the Sysco 100C, a full-colour VDU displaying the company's private viewdata system Computex.

The S500 will demonstrate word processing software, principally the Word 500 package, while the 8750 will be running Mantel — a high-powered manufacturing package, and Telfin — a general financial package.

Another British mini manufacturer, **Computer Technology Ltd** (CTL) uses Compec 82 as an opportunity to show its range of desktop workstation computer systems.

CTL's workstations are designed for distributed processing applications and operate either standalone or in a local network. Each workstation gives one megabyte of RAM with a local networking capability giving shared resources of up to 120 megabytes of disc storage.

Aimed at both end users and OEMs, CTL's workstations offer support for standard communications protocols, including IBM 2780, 3780 and 3270 emulation. It also offers communications support for X25 and CTOS, a real time multi-operating system, as well as the Cobol, Fortran and Basic languages.

Of the companies with DEC associations at Compec 82, **Darkcrest** is likely to cause interest in view of its recent legal battles with the US company.

Darkcrest will be showing systems incorporating LSI-11/23, PDP-11/24, /34, /44 and /70 equipment and the VAX-11/780 range of superminis. Darkcrest claims the standard DEC operating systems run faster using its own range of peripherals.

These include a range of disc drives, magnetic tape transports, communications multiplexers, line printers and VDUs, as well as MOS and cache memories.

Darkcrest will be demonstrating its new 64-line asynchronous and synchronous controllers for PDP-11 and VAX-11 computers, and a new range of Winchester disc drives for all DEC processors.

US Company **Dataram** continues the DEC presence at Compec 83, featuring two new LSI-11 based systems, the *M23* and W23.

The rack-mountable *M23* incorporates an LSI-11/23 system, I/O Map module and one megabyte of main memory. Twenty-one additional slots are available for expansion. The *M23* can support up to four megabytes of main memory.

W23 is the larger model, the same basic machine as the *M23*, but also giving an 80-megabyte Winchester disc drive and controllers.

Hampshire-based **Dicoll** will be showing a range of advanced technology graphics terminals.

The AED 767 is said to be the world's first commercially available graphics terminal with inbuilt anti-aliased vector generation.

Dicoll's AEDS II is a design station made up of the AED 767 graphics controller, an LSI-11/23 with 512K of RAM, a 10.4 megabyte Winchester disc and 12 free Q-bus slots for expansion.

DEC systems house **Ace Microsystems** from London uses Compec 82 to show its Lex-11 software, a British word processing system for DEC and DEC-compatible computers. Lex-11 runs on all PDP-11 models and operating systems, from the DEC personal computer to the VAX.

Features of Ace's package include an integrated spelling system and a version of Lex-11 written in D and using faster and less memory.

Arrow Computer Systems will be showing a range of LSI-11 based systems including a low-range A-I system, with 265K of RAM, mini-floppies and a 20-megabyte Winchester.

Arrow will also be launching a system for linking two DEC machines using a memory window technique, a device for memory sharing between four DEC computers and a range of colour graphics.

Hertfordshire-based DEC house **Data Design Techniques (DDT)**, will show its own LSI-11 and PDP-11-based systems and a range of peripherals. DDT's systems can be run under Unix III, which DDT both supplies and supports.

DDT will also display its Universe 68 system based on the Motorola 68000 microprocessor. The Universe uses standard 32-bit Versabus, allowing direct channel access to all memory by DMA peripherals.

Other outfits with DEC connections at Compec 82 include **Filetab S[illegible] Services**, the London-based DEC software house, with its RPL (Rapid Programming Language) and RQL (Rapid Query Language) for DEC PDP-11 and VAX computers, **Dectrade**, with a range of DEC hardware, US DEC peripheral supplier **Emulex** and Yorkshire-based **Fungus Computer Products**, with a range of DEC-compatible peripherals.

Enterprise, a DEC software house, will be showing its range of products for PDP-11 and VAX computers, including manufacturing, stock management control and payroll systems.

Berkshire-based **MCS Minicomputer Systems** comes to Compec 82 to launch a product and seek to extend its dealer network for 1983.

MCS will be launching the Mini-Micos, an entry-level Micros system compatible with the rest of the range.

The Mini-Micos comprises a 64K CPU, a 150-cps matrix printer, a Midas VI VDU and 16 megabytes of hard disc. The system can be expanded to 32 megabytes of disc storage and 32 VDUs.

London-based systems house **Hoskyns** will be showing its range of business systems.

Hoskyns will be showing several complete business systems running on its own hardware or DEC minis. These will include application products for the retail, hotel and legal sectors.

Berkshire-based Prime system builder **LMR** will be at Compec, showing a range of software for commercial systems and information management.

Software is led by Admin, the system development system which requires no programming, and ADNDA for integrated accounting.

Positron will be present, demonstrating its full range of multi-tasking, multi-user systems including the 9000 desktop unit and the 900 standalone CPU.

Positron will display OS-9, a Unix-like operating system which supports a range of languages including CIS Cobol.

Surrey-based **Micro Consultants** will feature its Intellect 100 and 200 image processing systems.

The Intellect 100 comprises a framestore and image processing hardware on which rests a DEC VT103 terminal with its own processor. This provides a dual mode display for both normal interactive VDU text and image monitoring.

MC's Intellect 200 is a higher-level system for research and development, The basic system on show contains fast hardware image processing facilities and is linked either to a DEC LSI-11/23 or a DEC PDP mini.

Iris Level 2 is MC's intelligent data logging graphics package and will be shown alongside Iris Eleven.

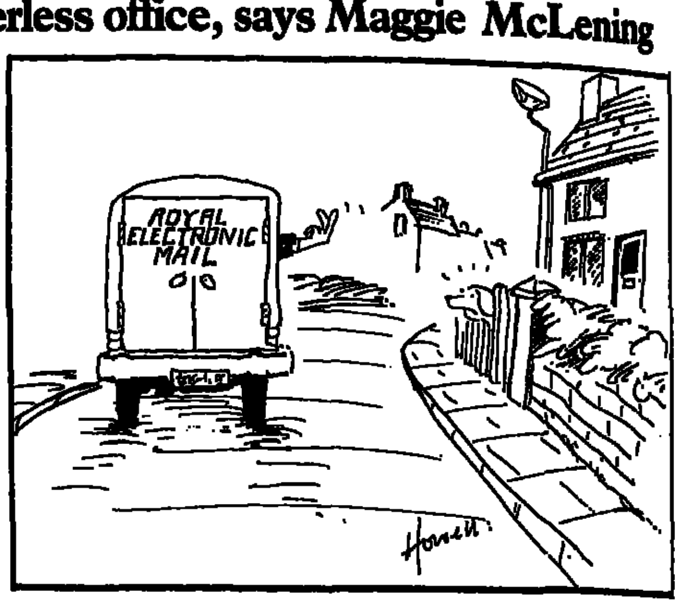
Other minicomputer exhibitors at Compec 82 will include **BCL** with its 3000, 3100 and 3300 systems, **Crellon Microsystems** — a Data General, HP, and Motorola hardware supplier — and **Plessey Microsystems** with fundamental memory modules, terminals, processors and complete computers.

Finland's **Nokia** will come to Compec 82 with its Nokia 3/18 × 16-bit CPU and a number of financial and stock-control packages.

OFFICE AUTOMATION 1

Where end-users do the processing you're closer to a paperless office, says Maggie McLening

Executive's security blanket holds back Office of the Future



WHILE paper remains the executive "security blanket", the office of the future will stay just that – in the future. Attitudes and experience have a long way to go before they catch up with the technology available to create a paperless office.

A whole range of excuses will need to be invented by recipients of electronic mail to cover up delays or no inaction on their part and to replace explanations about letters being lost in the post or misfiled. Anyone sending a message via a Cambridge Ring network, for example, would have instant proof of delivery and where data is filed automatically it is also retrieved by an exact reversal of the filing process, and cannot easily be lost by mechanical means.

Having said that, it is true that great strides have been made towards reducing the amount of paperwork circulating in offices, and have been welcomed in most cases.

Early data processing systems tended to increase the amount of paper used rather than decrease it by introducing an intermediate punching document. Transcribing data from the original form would be a full-time clerk's job, and punching it on paper tape or cards for batch input a full-time punch operator's job.

Growth of online systems has reduced the number of people involved, and has dramatically reduced paper consumption and errors by allowing the information to be handled by end-users, who understand its significance and can respond to an immediate response from the host computer.

One of the best examples of this is an integrated accounting system, where data need only be input once to be passed on to all the relevant ledgers, and appear in resulting financial reports. The abundance of this type of accounting package in the micro market is ample proof of its popularity.

Word processing has so far only managed to improve the quality of letters produced in bulk, such as mailing shots, routine reminders, or other sterotyped letters that are more effective when personalised.

Linking word and data processing, however, has proved beneficial in both directions – essential items of input data for the DP system can be extracted from letter text automatically, and extracts from data files can also be manipulated for inclusion in reports on the word processor.

Reports that used to be produced as foot-high stacks of incomprehensible print-out are dwindling, partly because DP departments have realised that the majority are not selective enough and have little impact.

Although Prestel, the public viewdata system, may not have captured its intended domestic market, it set many companies thinking along the lines of private viewdata. The Gateway option launched this year made the idea even more attractive, giving access to private databases both in the UK and abroad for the price of a local telephone call.

British Telecom's latest venture, the Dialcom electronic mail service marketed by Telecom Gold, carries the concept a stage further by giving users a personal mail box on a central Prime 750 minicomputer, accessible either through the public telephone system or through British Telecom's SwitchStream packet switched network.

It will probably take some time for confidence to build up in the electronic office as a whole, because it will be arrived at through using individual components first.

Computer Technology Limited will be exhibiting some of the fruits of its group's combined experience at Compec this year, including its well-known 8000 Series of superminis. The run under the Modus operating system and have the Intelligent Communications Environment, ICE, integrated to separate the tasks of collecting and processing data, by adding Character Level Processors.

The main product on the CTL stand, however, will be the CTL Workstation, manufactured by Convergent Technology in Santa Clara, which runs under the CTOS operating system, and has displays for eight windows, a data management system information retrieval tools and will also have graphics facilities shortly.

In September, CTL launched a range of advanced communications facilities known as ADCOM for the CTL Workstation, which includes asynchronous terminal emulation, X25 protocol access and a communications processor to supplement IBM 3270 interactive and IBM 2780/3780 remote job entry terminal emulation.

CTL recently challenged the supremacy of Tandem Computers non-stop processing systems by launching its own Momentum system at a quarter of Tandem's prices.

Another company which has gained solid experience in a local government environment is Digico, which has installed £500,000 worth of networks at Swansea City Council and Kirklees Metropolitan Council in conjunction with British Microsystems. Digico, which is based in Letchworth, Hertfordshire, will be demonstrating to Compec visitors what has been achieved in these installations with its 7800 convergent technology machine series.

The company claims that the 7800 series provides users with the best of all worlds – packages based on the standard micro operating system CP/M, such as word processing, financial modelling and stock control, for mainframe users with Prince terminals; a Prince II single standalone micro for first time users, and flexible networking facilities of a minicomputer.

On show at Compec, Digico will have the latest Prince II micro with a Winchester disc, the Prince 15, with a 15-inch screen, linked into a network and a cluster of 3800 terminals accessing a 32 Mbytes database.

For those particularly interested in linking CP/M based micros to a mainframe, **Digital Microsystems'** stand may well be of interest. Digital Microsystems offers the HiNet microcomputer network which can link up to 32 intelligent workstations with a single communications cable, and which, with the addition of a further software package, will allow the network to talk to IBM, ICL and Sperry Univac mainframes.

Workstations are from the DMS range of micros running under either CP/M or CP/M-86 operating systems, which have compact desk-top units, rotating screens and HiNet interface units with ports to connect to separate display terminals. One of the micros acts as the network master to control the flow of the data between the other workstations and the central hard disc storage, or any shared peripherals such as system printers.

Logica VTS, the micro hardware arm of software house Logica, will be showing its 16-bit personal computer, based on the Intel 8086 chip, which can be linked into the Polynet 10 Mbit per second network.

The VTS personal computer currently runs under Digital Research's CP/M86 operating system, but Logica has plans to implement Xenix, Microsoft's derivative of Unix, and MS/DOS.

Logica currently supplies versions of Unix System II for Digital Equipment Corporation PDP-11 and VAX minis, as well as for systems built around the Intel 8086, Motorola 68000 and Zilog Z8000 microprocessors.

At the upper end of the workstation market, there are plenty of systems based on minis or superminis.

Hamilton Rentals will be unveiling its Computerised Office Management System, COMS, at Compec based on Digital Equipment's PDP-11 and VAX machines, and available either as a turnkey package or separately as software.

COMS has been designed in layers each of which performs an independent function, but which combine to provide an integrated office system.

The lowest level of the system is Autotelex, a package which enables the user to create, edit and send telex messages from any available terminal, which circumvents the usual bottlenecks that develop in most organisations. Automail, the next layer, is an electronic mail package that controls routing of incoming telex messages, recorded delivery of messages, archiving and delayed purging. It has multi-level password security, and features addressing of mail by name rather than by code number.

At the apex of the system is the OS11 word processing package which links directly with Autotelex and Automail, and also runs under RSX, RSTS/E and VMS operating systems. To complete the office automation, Hamilton will also be demonstrating local area networking.

Also in the mini market, **Data General** will be demonstrating its Comprehensive Electronic Office, CEO, based on the Eclipse range of information systems, including the 32-bit virtual storage MV Family.

CEO, which DG claims can co-ordinate and control multiple

■ Turn to page 35

OFFICE AUTOMATION 2

■ From page 34

functions within multi-location companies, emulates the flow of information within an office using electronic mail, electronic filing, word and data processing, and decision support facilities. It can be tailored to individual companies by using parameters to indicate scheduled resources or corporate holidays, for example. Access to the system can also be adapted to fit specific user's needs with a "personal profile" of them which can bypass the menu structure to give them more direct access, if necessary.

For experienced DP users, however, with an emphasis on those working on systems development, the GEM electronic office could be the answer.

Supplied by newly-formed **Precision Software** in Worcester Park, Surrey, GEM environment manager provides business users of computers based on the Unix multi-tasking portable operating system with a range of office automation products, including the XED word processing package, GEM accounting programs and TXED full screen editor.

It can be seen on **Advanced Software Technology's** stand, where it will be running on the Zilog System 8000, under Zilog Enhanced Unix System, Zeus, which gives multi-user, multi-tasking and time sharing operations. Users of the system can perform simultaneous tasks using Cobol, Pascal, Fortran 77, PLZ/SYS, Business Basic and C.

AST will also be introducing its newly developed 10 Mbyte Winchester disc drive system based on the Zilog MCZ-2, which replaces one of the floppy units. It has also announced that an economically priced shared date system capable of handling 48 Mbytes will soon be available.

Unix is an increasingly popular flavour for local area networking systems, as well as for a software development base.

Dublin-based **Intelligence** *(IRL) Limited* has a range of software products in the areas of office automation, graphics and communications, all available under CP/M, MP/M, Unix and Unix look-alikes. In the field of word and text processing it has the Microscript package, which includes cut and paste facilities, a built-in calculator and programmability.

Systems house **Keen Computers** will also have Unix-based systems on show, together with its microcomputer local area networks, the Corvus Concept supermicro and the multi-user Onyx and Plexus systems.

Using the Corvus Constellation networking system, up to 64 micros linked by multiplexer can share peripherals and 72 Mbytes of hard disc storage. The Constellation is manufacturer independent, and machines from Apple, Commodore, IBM, NEC, Rank Xerox, ACT and Tandy are among those that can be linked.

Corvus Omninet will also allow up to 64 micros to communicate, over a distance of 4,000 feet, transmitting data at the rate of one million bits per second.

Compec will see the launch of the Corvus Concept supermicro running under Unix, which can function either as a workstation in the Omninet network or as a stand-alone personal computer. It offers the Edword word processing package, bit-mapped graphics and Logicalc financial modelling system in the way of business software.

Visitors to Compec who are interested in manufacturer-independent networking should make a point of looking at stands held by **Ambar Components, Master Systems** and **Aeon Business Computers.**

Ambar Components supplies products from 3Com for the Xerox Ethernet Local Area Networking system, fast becoming an industry standard, and since signing with 3Com about three months ago has shipped £100,000 worth of equipment to three major UK companies.

Sole UK distributor for Fujitsu memories and micros, Ambar also markets the National Panasonic range of high resolution monitors.

Camberley-based Master Systems will be showing the Xibus automated office system, which connects any make of computer or word processor into the Xinet ring and gives gateways to external systems or services.

The Advanced Electronic Office Network that Aeon Business Computers will be exhibiting is a British designed networking system that is independent of specific operating systems and processors. It allows a group of users, each with a workstation, shared access to central resources including electronic mail, diary, noticeboard, telex and teletex.

For those whose idea of office automation runs on simpler lines, there will be a chance to try out components individually at Compec. Word processing, which seems set to wipe out the electric typewriter within the next few years, is advancing into the area of data processing as well as becoming more complex and sophisticated in its own right.

Scientific text is a fairly recent development on word processors, and **Advent Data Products** will be launching such a machine at Compec this year. The Formula One can create, process and print both scientific formulae and conventional text.

Print quality and refinement has had to keep pace with word processor demands for letter-quality output, and ADP will also be showing the recently-introduced Sanders S700 high resolution dot matrix printer, which can reproduce up to 12 different typefaces using interchangeable font packs.

Data Dynamics will also be showing a dot matrix printer, in this case the Zip RO, which is designed to be especially robust for use in either office or factory environments. It can be connected to the DD-Vitel terminal, or any other computer or communications system.

The DD Vitel keyboard/display terminal can be combined with the Zip 585 paper tape reader or punch to form a telex preparation system. Messages can be input and edited on the DD-Vitel, then punched on five-level telex compatible paper by the 585, and incoming messages are routed via the 585 to the screen.

A micro that has carved its own unique niche in the desktop business market is the Osborne 1 portable, which is increasingly being used to communicate with other, usually remote, machines. Looking like a briefcase when packed up, the Osborne has a built-in five inch CRT screen and the ability to operate from European or US mains supplies, or from a battery.


Dr Patrick Pauer and George Wilk, joint MDs of BPS Consultants.

Osborne Computer (UK) will be demonstrating the machine, and the £800-worth of software with which it is bundled for an overall price of £1,250, plus VAT. The five programs included in the price cover applications ranging from business and engineering to educational and scientific.

With the balance of the market tipping in favour of software rather than hardware from the user's point of view, it is hardly surprising that systems house **Norsk Data** is launching a mid-range minicomputer to carry its Orbis commercial software tools in a networking environment.

Stressing the importance of installations running common software, Norwegian-owned Norsk Data, a subsidiary of Norsk Data AS in Oslo, will be demonstrating its ND-Satellite micro, and the ND-540 32-bit supermini, and launching the mid-range ND-100CX mini.

Financial accounting systems proliferate in the micro area, the majority written for a CP/M or MP/M environment, and there is often little to choose between packages apart from the bells and whistles which garnish them.

Dual currency operation for sales and purchase ledgers is the selling point of **Omicron Management Software's** latest addition to its Powersystems range of business software. It allows the user to enter transactions in either currency, altering the exchange rate as required, and will produce full reconciliation and reporting on a daily basis in both currencies, and interface with the Power Ledger nominal ledger.

Omicron's range of multi-user systems, the Multipower products, has been extended to run under MP/M, as well as DPC/OS and HiNet for which it was originally developed.


The DD-Vitel from Data Dynamics.

Still in the area of integrated accounting systems, **Paxton Computers** of Cambridge will be exhibiting its business Desk and Sales Desk range of CIS Cobol packages for micros running under CP/M, and some other multi-user and networking systems.

Designed for use by inexperienced first-time users, the Business Desk is a business administration system covering sales, purchase and nominal ledgers, sales invoicing and stock control, with either open item or balance brought forward options.

Sales Desk is essentially for maintenance of customer information which can be coded in a variety of ways to produce selective reports or mailshots.

Software Development Services based in Dublin, has a system aimed at insurance brokers, which incorporates policy renewals and claims, and claims recoveries and provisions, with accounting and management reporting. Loans and deposit systems, catering for leasing, personal loans, hire purchase, bridging loans, instalment and non-instalment credit, have also been installed in credit finance companies.

Compec visitors more interested in developing their own applications for the office would be advised to browse among the stands of **Graffcom Systems, Real Time Systems** and **Positron Computers.**

Although the Business Applications Group of Graffcom Systems has a ready-made Integrated Small Business Software (ISBS) range, WP2020 word processing, CM2020 configurable information management, and FP2020 financial planning for micros, the Advanced Products Group is launching a Software Development Toolbox at Compec.

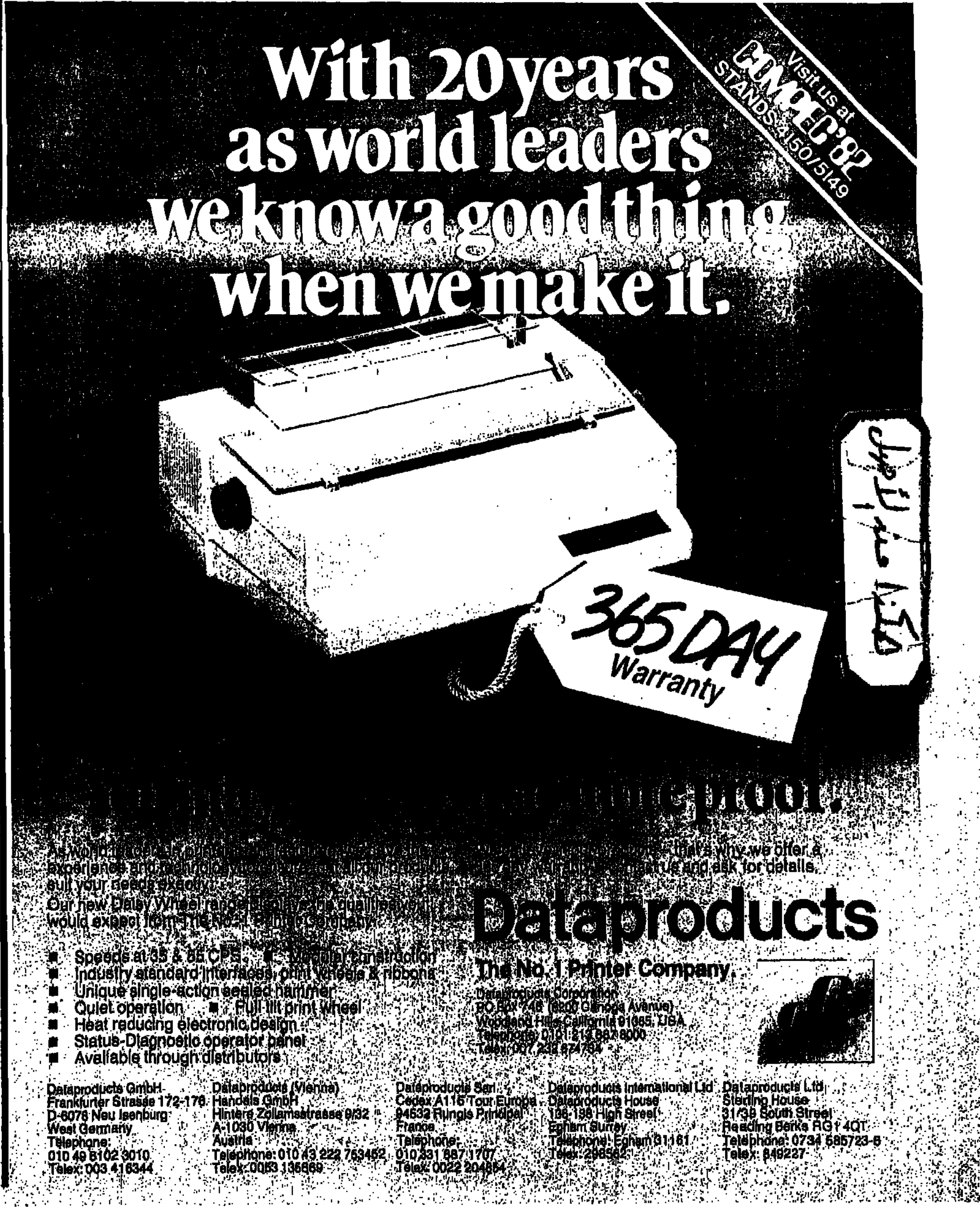
SDT will include relocatable assemblers, builders, locators and other utilities, and is designed for systems programmers.

Microcomputer manufacturer Positron is covering all options for its range of multi-user multi-tasking machines, which include the 9000 desktop unit. The OS-9 operating system which is standard on Positron equipment is similar to Unix and supports a wide range of development tools and languages, plus applications packages from MSA-owned software house Peachtree, and word processing, electronic spread sheet and financial modelling.

Systems developers can see Whitesmiths' Pascal, "C" and cross-compliers running under the Unix-derivatives Idris, Xenix and RT-11 on Real Time Systems' stand. New products on show include code generators and cross-assemblers designed for 6809 and Z80 microprocessors by RTS, and those for 8086 and 6502-based machines by Advanced Digital Products.

Companies in the transport industry may be interested in a load planning system developed by **Rainsford Logistics** of Dublin, part of the Guinness Group.

The objective of the Alpa system is to achieve the best possible trade-off between distribution costs, customer service and labour relations using both the load planner's experience and the computer to allocate undelivered loads to transport available.



Claire Gooding's easy-to-follow guide to the wealth of available applications

The Village becomes a town as software moves up the user's priority list

THIS year at Compec, software vendors will have their own space in Polygon Hall. Last year's Software Village, where software was given its own space for the first time, proved so successful that in 1982 the village is more of a town, with over 40 exhibitors.

Last year over half of Compec's 32,000 visitors showed specific interest in the software by visiting the Software Village, which made its 1981 debut in the gallery at Olympia. This proves the long-predicted trend for users to put software higher up the list of priorities, even considering software needs before they look at hardware.

This year one of the main exhibitors in the Village is the Irish Export Board. Having already attracted major manufacturers such as Apple to Ireland, the Industrial Development Authority is now making great efforts to boost its native software industry.

Ireland already boasts over 150 software companies, with annual software production estimated to be worth around £300 million.

While the Irish home market remains fairly small, most Irish software houses rely heavily on exports, with over 70% of exported software going to the UK.

A cross-section of these companies is represented by the seven firms whose wares will be on show on the Irish Board stand. Some of the companies are "testing the water" in the UK before setting up here, or looking for dealers in the UK to represent them.

Details of other software products from Irish companies not represented at Compec are available from the Irish Export Board's own stand.

Many of the companies in the main part of Compec now concentrate on microcomputers or at least the bottom end of the market, where, these days, the word "micro" can be used to describe something fairly fast and powerful with access to hard disc storage.

This shift in interest is reflected strongly in the Software Village. Over half the companies exhibiting are offering packages and utilities for eight-bit and sixteen-bit microcomputers.

Offerings for the minicomputer market are also at Compec in full force. DEC users in particular are well represented, with more systems on offer for PDP-11 and VAX machines than for any other hardware.

To help you plan your visit, Computer Weekly has surveyed the Software Village exhibitors in groups dealing with particular applications areas.

People who are looking for basic accounting and financial systems are well catered for, with over a dozen different systems on a variety of hardware on offer. **EPS Consultants** will be showing the micro version of its famous and widely used FCS financial modelling and planning system.

The FCS system is thought to be the most popular of the many financial planning systems available now, and has been adopted by many OEMs. FCS has penetrated the large corporation market in particular for corporate modelling and forecasting.

This powerful system was adapted for running on microcomputers last year, and the version being shown by EPS Consultants will run with the Unix or the CP/M operating system.

The micro EPS system made the company one of the first to be able to offer its application from mainframe right down to micro level.

A well-known set of accounting packages is on show on the **TABS** stand, V50 to V52. The TABS microcomputer packages which gave the company its name — The Accounting Business System — have been adopted by many microcomputer users.

This successful company grew out of a small "cottage industry" in microcomputer software, with the aim of supplying robust and flexible packages to this expanding market. TABS packages run on the CP/M operating system, and also on the Apple II, on two floppy discs.

Also exhibiting systems for the CP/M OS is **Aeon Business Systems** on stand V57. Local area network software is at the centre of Aeon's plans for the automated office. The company builds workstations for the CP/M system, and links them over a 500-Kbyte SDLC network, to shared resources such as disc drives.

The company says there is no limit to the number of workstations that can be connected, and that applications can share up to 80 megabytes of storage.

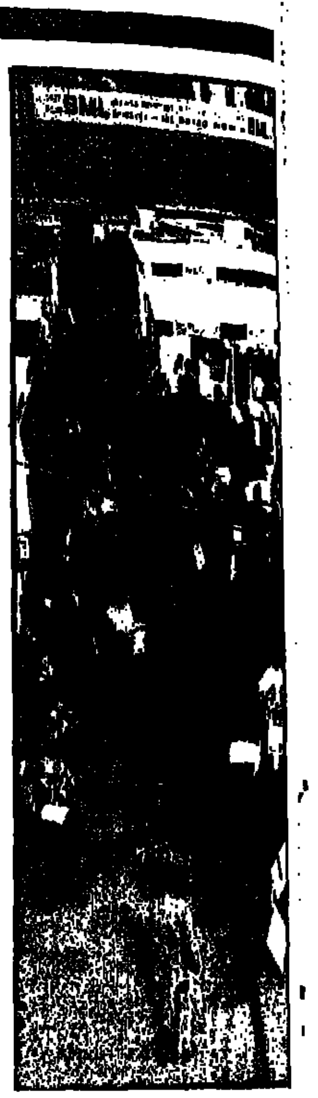
More accounting packages for CP/M, whether networked or not, are to be found at stand 7160 in the main hall, where **Selven Systems** is showing business systems. Selven's accounting systems are run using the Extel local areas network.

Selven provides turnkey local area networks with up to 32 workstations. Other applications it offers for its CP/M-based machines include a production control package with scheduling, costing, and work-in-progress control.

An even wider selection of application packages, including accounting and financial, are to be seen at **Lifeboat Associates** stands, V41-V42. Lifeboat is one of the best-known names among the many microcomputer software suppliers which have sprung up in recent years.

Lifeboat offers applications and systems software to run with the CP/M, MS-DOS and SB-80 systems, as well as compilers and languages from such firms as Micro Focus.

Business packages and database systems for eight-bit and 16-bit machines are also on offer, and for


Last year over half the people at Compec visited the Software Village

anyone seeking to start up a m system from scratch, Lifebo stand is a good place to get an id of the many options open to th first-time buyer.

Moving further up the mark DEC users looking for busin systems and financial software w find plenty to inspect. **Enterpris Systems** is offering accounti systems as well as real time, onli stock control and manufactu distributing systems, on st V54.

The systems can be used existing installations, or Enterpris will supply them on a turnkey b sis. The company also offers a se vice for companies in several loc tions which wish to develop corporate computing strategy.

Another company specialising applications for DEC is **Manage ment Control Systems**, on st V28-V29. MCS has a number of commercial systems based on DEC kit — it was the first to be authorised as a DEC distributor the UK.

Systime, whose wares are show at stand V18, is already well-known name in the DEC OEM marketplace. Systime will be showing a range of DEC-based systems catering for users wi varying needs, including the Systime standard requirements accounting and financial applic tions.

Software Village

Systime will also be showing the latest enhancements to its Syst teleprocessing monitor.

Also for the DEC user, the well known company **Hoskyns Busi ness Applications** will be showing its accountancy packages, als available on Hewlett-Packard kit.

Hoskyns does not stop at ac counting packages: DEC users will also be able to look at offerings in the area of insurance, distribution, manufacturing, retailing, shipping, vehicle contract hire and legal practice, and the more specialised area of hotel manage ment. This wide variety of applica tions can be seen on stands V67, V68 and V87-V88.

Still in the area of accounting and finance, other companies which are offering such software for minority markets are Unix specialist Advanced Software Technology, Software De-

■ Turn to page 37

■ From page 36

velopment Services, Smurfit Computing and IDS.

Smurfit is one of the Irish companies in the Village. The firm offers its own business accounting software written in Cobol for the Data General CS range of machines.

The accounting system is used by the company as one component of a much more specialised system, built specifically for the paper industry. Smurfit's paper systems deals with all stages of the papermaking and distribution business, from waste reclamation to merchants, paper mills, job printers and packaging firms.

Smurfit Computing is the offshoot of an international company. The firm already has a UK office in Warrington, and has been trading for 16 years. Smurfit can be found at stand V40.

Software Development Services is another of the Irish companies in the Village, this time specialising in financial software for IBM's System 34. The company offers not just accounting systems, but applications for insurance, banking, brokers and credit companies. Software Development Services is seeking UK agents for its packages, which can be seen on stand V30.

The third Irish company in the accounting and general business application area is IDS. Not to be confused with the London-based IBM System 34 software house of the same name, IDS specialises in microcomputer software, and also distributes DEC micros and Televideo kit.

As well as providing accountancy packages and insurance systems, IDS supplies more esoteric packages, such as school timetabling, public house stocktaking, and, less specialised, critical path analysis. All IDS systems run under the CP/M operating system, and can be seen on stand V33.

Another area of software development where application packages are beginning to make an appearance is the Unix operating system.

The Unix OS has long been tipped as the answer to the problems of the 16-bit market, which seeks a credible time sharing system for multi-user installations. But Unix has been hampered in its growing popularity by its poor user interface, and more significant, a lack of ready-made commercial applications.

The showing of Unix packages at Compec proves that this deficiency at least is being put right.

Ace Microsystems, on stand V60, is showing its decision table programming language, which works under CP/M as well as Unix. The language gets its launch at Compec.

The company will also show what is claimed to be the leading word processing package for the DEC market, Lex-11. Lex-11 works on DEC machines from the Professional microcomputer to the VAX supermini, running under PDP-11 emulation. The new language is already well proven, since Lex-11, already well established, was developed using it.

Also showing applications which work under CP/M as well as Unix is one of the Irish companies, Intelligence (IRL). Intelligence offers packages for office automation and business graphics. Communications interfaces are also available, covering IBM and X25 standards. This software can be seen on stand V37.

Advanced Software Technology also has business applications for Unix on offer, on stand V37. AST business packages include the XED word processing system, and Gem, a menu-controlled system for accounting.

Real Time Systems, the Newcastle-based company which distributes the Whitesmith's Idris version of Unix, now has an impressive array of applications to offer in harness with Idris.

The company will be showing the Uniplex office automation systems on an Imp-68 running under Idris. Redwood's word processing software is also available for Idris systems through RTS, which is gradually building a comprehensive range of applications.

RTS will also show systems software available for Unix installations: cross-assemblers, for Intel, Zilog and Motorola microprocessors, compilers for Pascal and the Unix language C. RTS is at stand V80.

Software Village

In the main body of the exhibition **Zentec**, a specialist in intelligent terminals, is showing a Unix micro for the first time. The multi-user 2020 is made by Zentec's parent in the US and the two at Compec will be the first off the production line.

The system takes full advantage of Unix memory mapping and protection facilities, with optional hardware arithmetic processor.

More plentiful and varied are the number of applications packages for the CP/M operating system. **Great Northern Computer Services** is launching its Mailflow mailing system at Compec.

The package can be integrated with Great Northern's Dataflow information management system, which can store names and addresses, and also with such standard word processing packages as Wordstar. As well as the mailing system GNCS has other business packages for CP/M microcomputers, as well as statistics and database systems for the Apple.

Paxton Computers, at stand V85, is showing its Business Desk package which runs with the range of CP/M OSs from single-user to multi-user hard disc systems. The Business Desk handles sales, purchase and nominal ledger, invoicing and stock control. Its companion system, the Sales Desk, keeps name and address records.

Transtec Computers, one of the companies exhibiting with the Irish Export Board, will be showing a new business microcomputer running CP/M. Other Irish companies already mentioned, such as Intelligence and IDS, are showing applications for running with CP/M, including stock control, critical path analysis, and office graphics.

Also in the CP/M business is **Tamsys**, at stand V20. Tamsys distributes products from the CP/M originator Digital Research, which now offers more than just the operating system itself. Tamsys will show the MDBS microdatabase system which runs with several different OSs and hardware.

Word processing and modelling packages such as Wordstar and Supercalc are among the Tamsys range, as well as a production control package called Scorpio.

In the main hall of Compec, two other CP/M merchants are to be found: **Selven Systems**, at 7160, and **Software** at 1207. Both specialise in business applications for CP/M, Selven in local area networking with CP/M, and Software in providing backup such as training and support for CP/M users, as well as guidance for those who do not know where to start in selecting packages from the vast range available to run under CP/M.

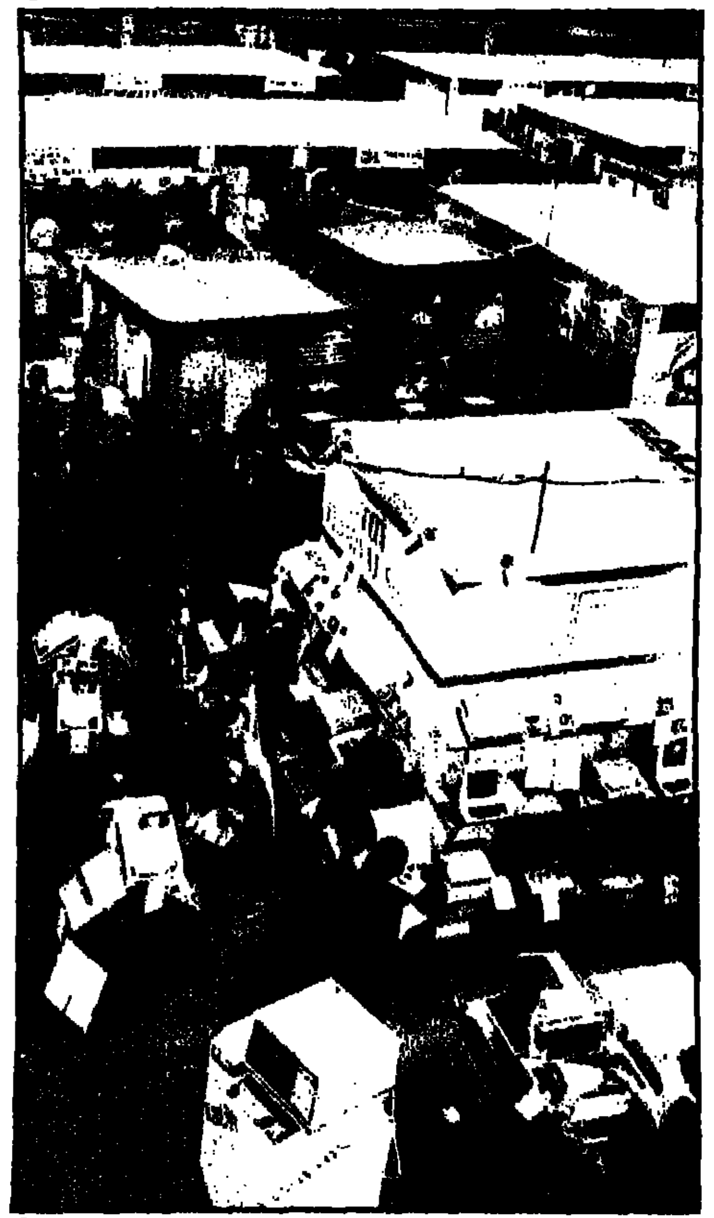
Also offering services for microcomputer users is the dealer Xitan, at stand V12, which deals with products from MicroPro and Digital Research, and will be demonstrating its new dealer system.

Xitan's online dealer service allows dealers to dial up a central computer and leave messages or orders direct to the order processing system.

Business applications for a very wide range of industries are on show from Logitek at stand 7144.

■ Turn to page 38

The Village has moved from the Grand Hall to its own space in Polygon Hall, and has grown in size: it numbers over 40 exhibitors.



Hamilton will launch its electronic office for DEC users.

■ From page 37

Logitek packages cover newsagents, solicitors, surveyors, hotels, contractors, insurance brokers, and estate agents.

More general applications are also available, ranging from medical records to financial modelling and business graphics, and fleet management. The company also offers a turnkey service, local area network consultancy, and customised software work.

Prime users are catered for at Software Village by the **LMR Computer Group**. Its business applications include online financial payroll, stock control, information retrieval and work processing software. LMR offers a turnkey service as well as its own Prime-based bureau service.

After CP/M, DEC users probably have the widest range of applications outside accounting to choose from at Compec.

D. M. England is showing five very different packages for the DEC community at stand V27. The packages are for VAX and PDP-11 machines and cover systems and applications areas. They comprise the Oscar stock control system, a private viewdata package, and a relational database manager.

Specialising in graphics for DEC and other users including Hewlett-Packard and SEL is **Prosig Computer Consultants**. Prosig is showing its Dats data analysis and signal processing package.

Typical applications for Dats include process monitoring. The graphics package can be used with Dats as a Fortran subroutine. Dats can be seen at stand V17.

Hamilton, which specialises in DEC systems, will be launching its electronic office system for DEC users at Compec. The package works on DEC PDP-11 and VAX minicomputers, and supports electronic mail facilities linked to telex, word processing and local area networks. It can be seen at stand 7025 in the main hall.

At stand V32 **Rainsford Logistics**, one of the Irish companies and part of the Guinness group, is showing its vehicle loading and route calculating package, designed for DEC minicomputers. However, they are portable, since the packages are written in Fortran IV.

Other exhibitors in the DEC area which have already been mentioned include Enterprise Systems (payroll and stock systems,) Management Control Systems, and Systime.

Those who come to Compec and Software Village in search of systems software rather than business applications will not be disappointed. There is a wide range of utilities, compilers, data management and development aids on offer, for a variety of target hardware.

Once again, the micros dominate Software Village offerings. **Vector International**, European distributor of Digital Research's CP/M operating system, is to be found at stands V15-V16. The company has been given plenty of scope by DRI's recent releases of new versions of CP/M.

Demonstrated by Vector will be the 16-bit version CP/M-86, to be seen running on the IBM Personal Computer. The latest version to make its debut is Concurrent CP/M-86, which provides users with sophisticated multi-processing and virtual screen management facilities.

For Hewlett-Packard users **Protek**, at Stand V23, provides languages and utilities for HP desktop machines. It offers Fortran and Pascal security systems, and text management software, as well as a turnkey service.

British Micro, at stand V82-V84, is showing its own Trojan computing system. Trojan, for use on the British Micro machine and DEC LSI-11 microcomputers, supports its own utilities and an English-like programming language.

The British Micro, running the systems software, will be shown by sister company Scifax Microsoftware at the British Micro stand.

For IBM users **CSG**, also known as Cambridge Systems Group, is showing its range of utilities and systems software. A new product on offer is ADC2, a job scheduling package for MVS. It submits jobs automatically and keeps track of them, providing information such as running time and use of resources.

Those searching for data management products in particular will also find many on offer, from micro to mainframe. Many are linked to development aids and support their own languages, or conventional computer languages. Probably the most famous of these is Cincom's Mantis, for IBM users, released as a total information and production system in 1981.

Mantis, which works with the doyen of database systems, Cincom's Total, was claimed to save routine programming tasks by reducing coding to as little as 20% of the normal workload. The system interfaces with most existing file systems, running on IBM mainframes, and enables end users to create their own applications as well as providing aids to speed the work of a professional programmer, such as screen formatting and documentation.

Also in the data management business for IBM users is **CACI**, on stands V64-V65, with a variety of products which also work with DEC equipment.

The recently launched Adam system will probably arouse the most interest, although as yet it is still described as a "technique" or methodology, and is not due for product release in commercial use until next February. Adam, Automated Development Application Modules, is a vast system which deals with all stages in design, and incorporates its own dictionary and code generator.

Another product from CACI is the Simscript modelling and simulation system, which made the firm its name in the US and is to be the subject of a sales boost in Europe for CACI.

Other data management products for DEC users are on offer from **D. M. England and Partners** at stand V27, and **Filetab Support Services**. Filetab, which is well-known for its information retrieval software, is showing its RPL and RQL programming inquiry languages. The company has over 300 users and claims that it can double productivity for the programmer and the end user.

The systems from Filetab run on the entire range of DEC kit, from the new Professional micro up to VAX systems.

Another company offering systems software and utilities for the DEC community is **Systems Designers Ltd**, at stand V70-V71. SDL's range extends across minis and mainframes, but the particular product SDL will be exhibiting at Compec is its latest offering for VAX users, a systems tool for designers to control the structure and design of systems.

Compec is rich in development aids for DEC users. **Real Time Systems** has its range of cross-compilers on offer at stand V80, and making its debut in the main hall is SPL's Sage system. Sage is an expert system, which can be used to develop specific applications by following its own design rules.

Sage has already been used to develop other expert systems for computer fault diagnosis, political risk analysis and heart disease diagnosis. The political risk analysis system, developed by the **SPL Knowledge Engineering and Expert Systems Group**, was built to familiarise large companies with the techniques of expert systems. The model investigates five areas of risk, and the damage they may cause to investment, such as stability of government and civil disorder.

SPL will be demonstrating the risk analysis package on its stand in the main hall, 9124.

Real Time Systems is offering new products for code generation, and cross-assemblers for the 6809 and Z80. The company also sells cross-assemblers for the 8086 6502, from Advanced Digital Products.

RTS will be launching the C Executive from JMI Software Consultants, a small multi-tasking real time system for dedicated applications, available for LSI-11, 68000, and 8080/Z80 target systems. It supports programs written in the C and Pascal compilers from Whitesmiths.

Plenty of data management products are also on offer for CP/M users. **Great Northern Computer Services, Lifeboat Associates** and **Tamsys** all offer database and data management products. Specialising in that area are **Southdata and Infodata**.

Infodata, at stand V90, is showing the FMS database, which is built with ease of use for end-users in mind. FMS runs with CP/M and CP/M-86 operating systems, and a Unix version is in the pipeline.

Southdata's Superfile database system, on show at stand V93, is a sophisticated and flexible tool for CP/M users. It forms part of Southdata's range of tools and utilities for micro users. These include packages for word processing and text processing.

Micro users are also well catered for in the area of languages and compilers. **MicroAPL** is showing its APL compiler at stand 9029-9030 in the main hall.

APL is a powerful language which can manipulate figures very efficiently.

MicroAPL is one of the few adaptations of it for micros. The language operates through a special keyboard which caters for its hieroglyphic symbols.

At stand V47 is **Soft Option**, a company which specialises in compilers for microcomputers (including some 16-bit machines) running the CP/M operating system. Basic, Cobol, Fortran and Pascal are available from Soft Option, and the company also provides utilities, word processing and modelling systems.

Micro Focus, a well-known name in the British microsoftware industry, has set up its own software centre in the main hall, at stand 9027. Micro Focus has won many awards for its Cobol compiler, which operates by the strict standards set down by Ansi and the US government.

Micro Focus will be playing host to more than half a dozen software companies which use its Cobol compiler to produce applications software. These include **Action File, Peachtree, CSA Microsystems, Daman Computer Services, Sheffield Micro, Sitpro** and **Systems Union**. Among the applications demonstrated will be production planning, accounting, and payroll.

Micro Focus itself will be showing the utilities, themselves written in Cobol, which make up the CIS Cobol development environment.

Other companies showing compilers and languages are **British Micro**, which has its own development language as part of the Trojan System, CACI, Filetab, dealing with end-user queries, and in the micro field, **Lifeboat Associates, Real Time Systems, Vector International, Xitan Systems**, and for Hewlett-Packard users, **Protek**.

For those who have already got their software and hardware and are now faced with the problem of linking it all together, there are a number of offerings in the communications field. British Telecom will be showing its packet switched service, SwitchStream One, at stand V14.

The system is part of BT's X-Stream communications services, which in its turn is part of a mighty £2,000 million-a-year programme to bring the UK's telecommunications up to date.

Cincom's Mantis systems can also be used as a communications tool for IBM sites using distributed techniques. In the DEC field **D. M. England** offers its private viewdata system, Systime is showing its Systel teleprocessing monitor, and Intelligence (IRL) offers communications interfaces covering IBM and X25 standards with its Business Applications. **Hamilton** and **SPL Products** also have communications facilities on offer.

Software Village

Scientific software is thin on the ground at Compec, and only **Prosig Computer Consultants** specialises in this area. The compensation is that Prosig's signal processing package and graphics software works on a wide range of hardware, including DEC, SEL, and Hewlett-Packard.

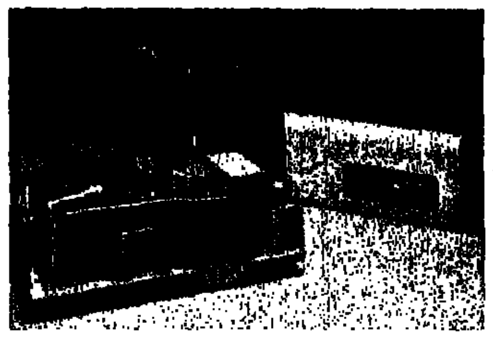
General services to the computing community are also represented in Software Village. **AP Computer Consultants**, at V24, offers a way of overcoming staffing problems. The company finds permanent staff from operators to managers, and also supply entire ready-made development teams to companies which have special projects on hand, over which they wish to keep tight control.

Before leaving Software Village, pay a visit to the *Software* stand at V25. *Software* is a new magazine, launched in June 1982 from the offices of Computer Weekly.

The magazine, released quarterly at present, caters for software professionals, many of whom now have to carry the weight of major decisions as software takes the lion's share of many DP budgets.

Software comes free to software professionals involved in the design, specification, development and purchase of software products.

To find out whether you are qualified to receive a copy of *Software*, call in at stand [illegible] for a reader application card.



A simple modem link between a terminal and a mainframe often isn't enough any more, says John Kavanagh on the comms scene

Today's user wants a more sophisticated system

COMPEC visitors get a glowing, if indirect, compliment from the communications companies on show this year. For the wide variety of companies reflects their recognition that users are now extremely sophisticated and well-informed and have a good idea of what they want.

Gone are the days when users merely linked their terminals and computers through modems. Nowadays they want to get the most from public and private communications services: they are looking at everything from data traffic analysers to complete network management systems; they want protocol emulators and converters to link incompatible equipment or to connect to emerging public networks such as British Telecom's Packet Switched Service.

This message is clear from the type of companies at Compec this year. At the same time the basic nuts and bolts of communications systems – modems and multiplexers – are constantly being brought up to date and made ever more reliable by the use of microelectronics.

The growing use of packet switched services is reflected in the number of interfacing devices on show for the X25 international standard for packet switching. One exhibitor putting special emphasis on such equipment is **Dynatech-Nolton** the offspring of a recent merger between Dynatech Communications and Nolton Communications.

Nolton has been a big supplier of packet assemblers and disassemblers – the devices which sit between a computer or terminal and a packet switched network to turn data into "packets" for transmission – since the British Telecom service began in 1980.

Its equipment range has been expanded since then to include large multiplexing packet assemblers and disassemblers which enable up to 64 asynchronous users to share one X25 trunk, plus synchronous devices for users of IBM's 3270 and 2780 protocols.

The company also offers an X25 switch for organisations building their own private packet switched networks.

Dynatech-Nolton's other products include modems, statistical multiplexers, line drivers, data encryption units for security, barrier circuits, level converters and a wide range of patching, switching, network control and testing equipment.

A new range of packet assemblers and disassemblers is among equipment being shown for the first time by **Alpha Datasystems**. The devices range from the Micromux, handling four ports to an X25 network, to the 96-port Maximux. The devices can convert asynchronous and other protocols.

Alpha Datasystems' Digitech data monitors can handle X25 and X21, IBM's SNA network architecture and the new teletex "supertelex" service. New with these products is a 32-megabit data capture unit based on a Winchester disc. Recorded data can be read back or transmitted at any speed for analysis by a data monitor.

Alpha Datasystems also offers the TP-400 polling system, which enables a "dumb" asynchronous network to be arranged as a multi-drop configuration. It thus gives the higher performance of synchronous network with the low cost of the asynchronous devices.

Other products include response time analysers, network performance monitors and T-Bar's new range of digital patching equipment.

Micom-Borer will be giving an exhibition debut to its new Micro800/X25, which enables 24 asynchronous terminals to share one X25 access link.

Also shown for the first time is the Instamux470, a multiplexing line driver designed for low-cost in-house communications, and a asynchronous terminal interface for links to Digital Equipment computers.

Four new modems from Micom-Borer are the 4024, running at 2,400 bits per second with synchronous or asynchronous terminals; the 4048/V27, running at 4,800 bits per second and suitable for multi-point applications; and two 9,600-bits-per-second modems, one for point-to-point networks and the other for multi-point operation. Micom-Borer also has the 4012/View viewdata modem.

Communications users are not only exploring new services such as packet switched networks; they are also seeking extra efficiency from the convergence of different technologies and the linking of incompatible equipment from different manufacturers. This is reflected in the number of protocol converter specialists and local area networks at Compec.

Interlekt is to feature the Datagram and Datalynx converters. The Datagram DM1600B, says the company, "allows Burroughs users to communicate with the outside world"; a swipe at computer manufacturers' attempts to tie their customers solely to their own products through their network architectures and individual communications protocols.

Interlekt's Datalynx range provides IBM protocols on asynchronous terminals to give users full screen formatting and dial-up IBM 3270 facilities at low cost. The company also offers the Renex protocol converter, which allows asynchronous terminals to be connected to networks using IBM's SNA network architecture.

Other equipment on show from Interlekt includes a range of data link analysers from Atlantic Research and statistical multiplexers and network management systems from Digital Communications Associates.

A series of protocol converters is being announced at Compec by **Newbury Data**, formed in May from the merger of Data Recording Equipment and Newbury Laboratories and now claiming to be the UK's biggest peripherals manufacturer.

The first in the converter series is a controller for ICL's CO3 protocol. It can handle four to 16 channels. All the controllers are available as desktop units or 19-inch rack-mounted modules.

Newbury Data is also launching a range of IBM 3270-compatible display terminals, priced at 25% less than IBM's products. And the company is aiming at Honeywell users with a 7800-compatible terminal with both the VIP 7851 and 7854 asynchronous and synchronous protocols.

With these announcements, plus disc drives and 10 printers, it is not surprising that Newbury Data has taken the biggest space at the show.

Hytec Microsystems shook up the ICL terminal market last year with one of the first ICL-compatible systems. This year it will introduce its C series of microcomputers. The systems are multitasking, run the CP/M operating system and support ICL's CO1, CO2 and CO3 protocols.

Computech Systems is an

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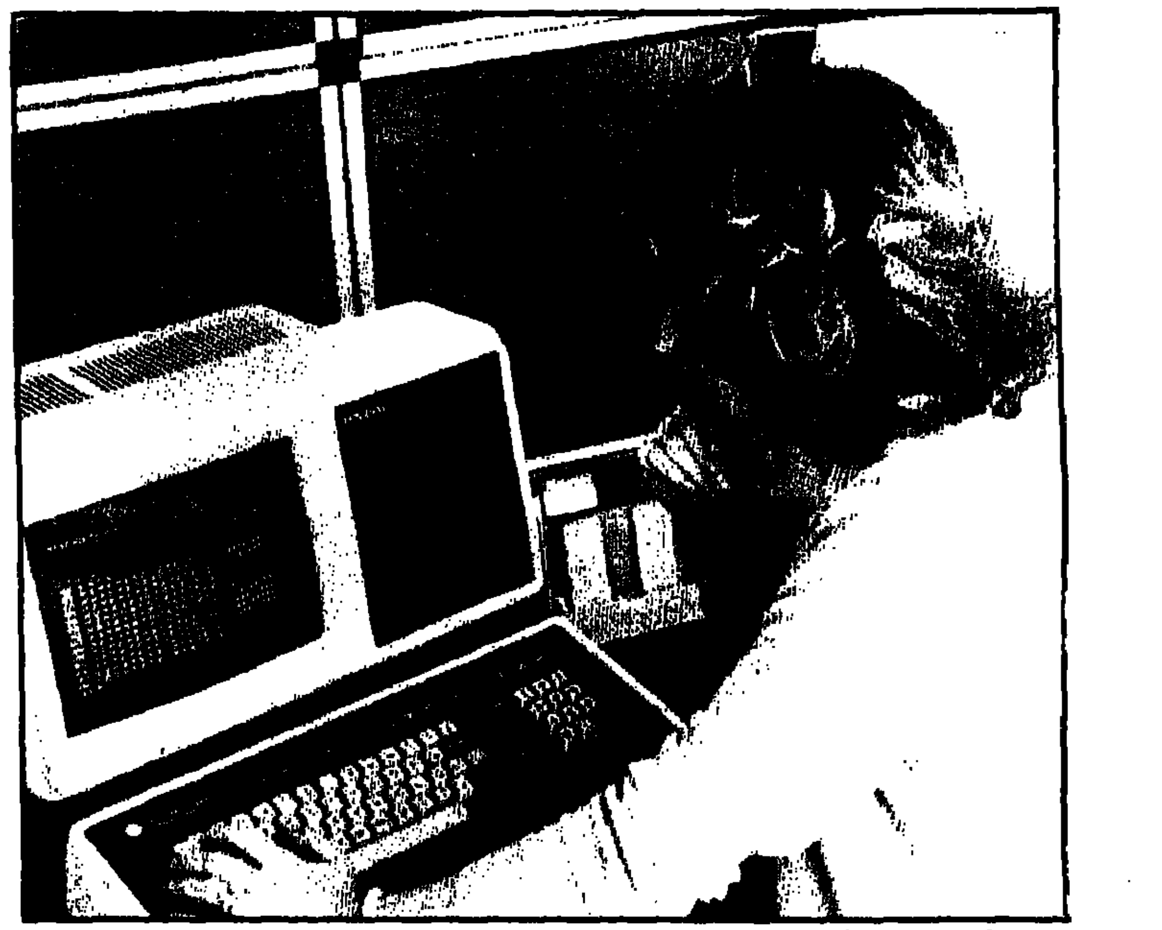
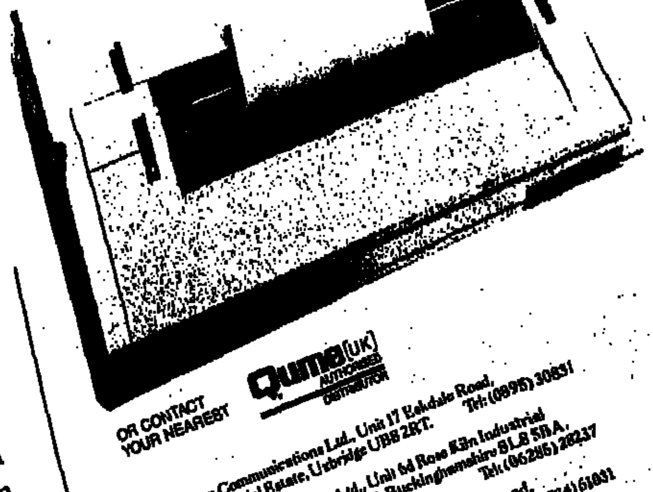


Hytec Microsystems' ICL-compatible H4500 terminal with full CO1, CO2 and CO3 communications protocol.



COMMUNICATIONS 2

■ From page 39

Apple microcomputer specialist. As well as showing business packages on Apples the company will demonstrate its Diplomat interface cards, which offer intelligent terminal facilities for users of various mainframes. Computech's Micromux serial asynchronous multiplexer allows 16 dissimilar resources of exchange data.

Another microcomputer supplier with communications ambitions is Casu. It will be featuring its Mini C II, a UK-designed and manufactured microcomputer based on the Z80A processor.

As well as the normal 64K of memory and floppy disc storage the machine has five input and output ports as standard and six spare slots for additional controllers. Communications can be handled by the Communicator, a multi-channel protocol converter.

More protocol converters come from Scicon, the consultancy, bureau and communications products subsidiary of British Petroleum. Scicon is aiming at IBM and Digital Equipment users with a variety of converters.

The Perle PDS is an IBM 3270 protocol converter; the Haspbox Comboard makes DEC machines look like Hasp terminals to an IBM computer; the KDX11 is a Unibus-IBM channel interface; and the DEC-IBM interface range is completed by the UMC 3780.

Scicon has moved into fibre optic communications with the Focom range of modems and multiplexers and has intelligent switching systems from Micom-Borer.

Work from the company's own engineers includes a computer response monitor, a console switch for merging system consoles and a diagnostic package and clock for Intel processors.

There will be demonstrations of Cavis, a computer-based audio-visual instruction system which mixes video cassette pictures and videotex pages interactively on a television screen. And serious visitors can get Scicon's free mail-order catalogue of communications products. Over 200 products are listed.

Protocol conversion for IBM, ICL, Sperry Univac, telex and packet switched network users is provided by Master Systems' Net-work Access System. The system enables dumb terminals to communicate with different mainframes, both local and remote, through terminal emulation modules. They can convert to IBM 3270, ICL 7502, Univac Uniscope, telex and X25 protocols.

Modems handling speed of between 300 and 9,600 bits per second, mostly with auto-dial and auto-answer features, are also on show from Master Systems.

The company's other boost for convergence is the Xinet local area network, the heart of Master Systems' Xibus automated office system. The network can support any computer or word processor, says the company, and all major components are duplicated for resilience. There are gateways to external networks or systems.

Companies well known in traditional communications product areas such as modems and multiplexers are also moving into local networking. Racal-Milgo will show its Planet network and another UK company, Computer and Systems Engineering (Case) will talk about its Grapevine.

This network uses existing telephone wiring in a building without interfering with speech traffic. Data traffic is directed through a Case switch to the required terminal, computer or shared resource such as storage. Options include user-controlled switching, contention for computer ports from several terminals, searching for a vacant computer port or external line and links to external leased lines or

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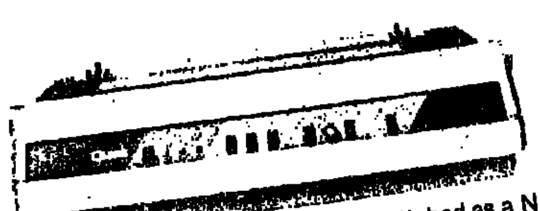
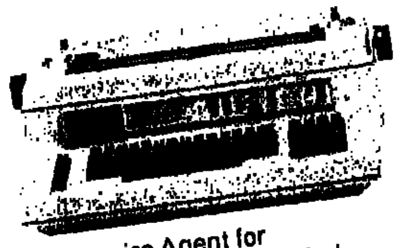
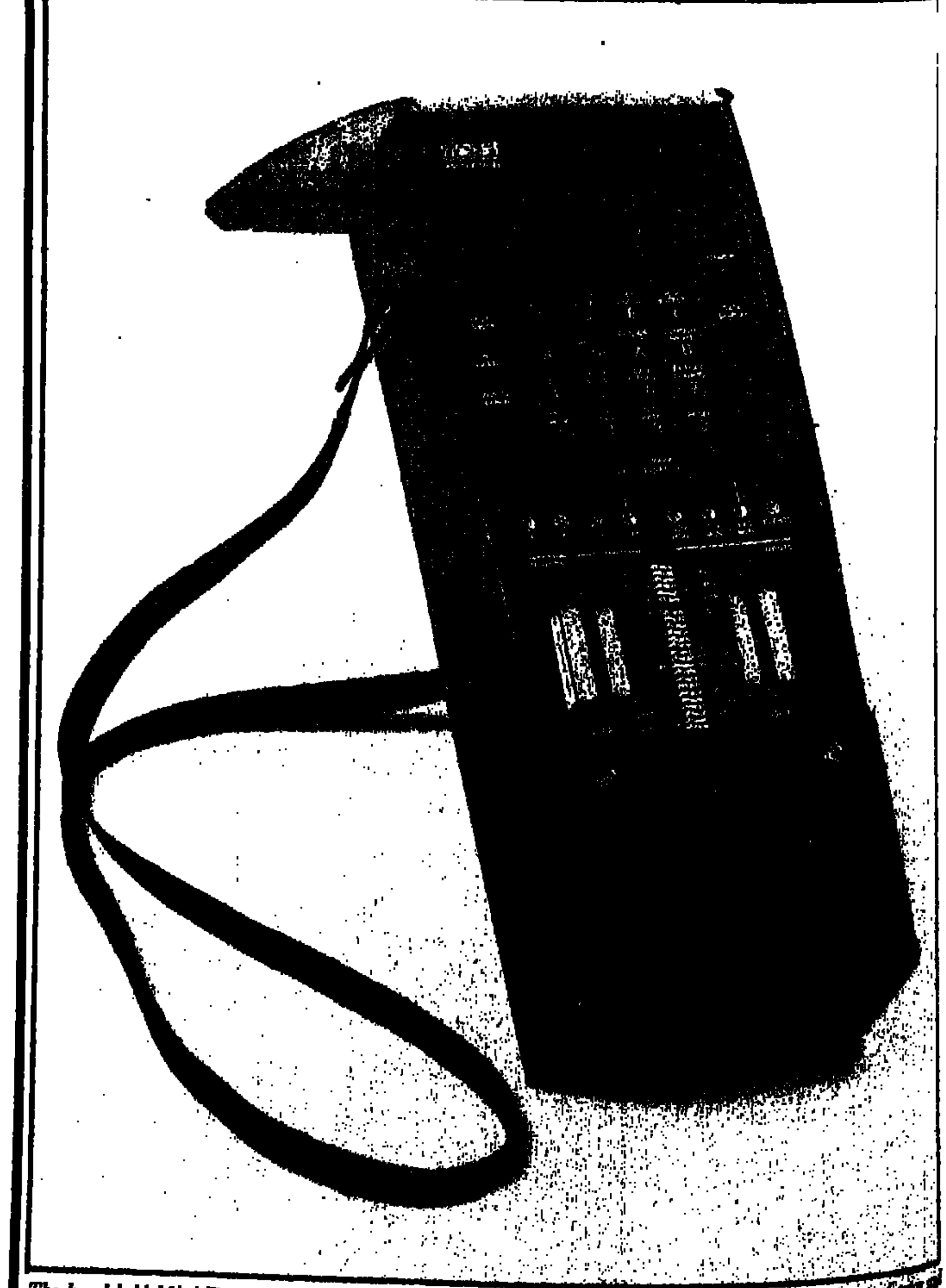
Trend Communications' telex terminal is offered by British Telecom as the Puma range. It has electronic message storage and automatic dialling.






The hand-held Mini-Tester 100 from Trend Communications is claimed to be able to perform a range of error and distortion tests normally associated with larger systems.

FEATURES	5251-11	5291	2051
Cable Through	OPTIONAL	STANDARD	STANDARD
Full Size Screen	YES	NO	YES
Tilting Monitor	NO	YES	YES
Non Glare Screen	NO	YES	YES
Auto Dimming Display	NO	NO	YES
Line/Block Cursor	NO	YES	YES
Line/Column Indicator	NO	YES	YES
Desk Space	MORE	LESS	EVEN LESS!
Copy Printer	NO	NO	YES

COMMUNICATIONS 3

■ From page 40

public networks. Grapevine is fully approved by British Telecom.

On the modem front Case is showing the 440/12, launched in April as the modem of the future. It is said to guarantee error-free data transmission even with low-cost unsophisticated terminals. Running at 1,200 bits per second in half-duplex mode, it detects errors in incoming data and arranges for retransmission if necessary.

It also works as a full-duplex viewdata modem, transmitting at 75 bits per second and receiving at 1,200 simultaneously. The 440/12 offers auto-dial and auto-answer facilities.

Case is also showing modems with speeds ranging from 2,400 to 16,000 bits per second, plus statistical multiplexers.

Racal-Milgo's Planet is based on the ring local network design. Data travels at 10 megabits a second on coaxial cable. Up to 500 devices can be attached. Racal-Milgo offers a start-up package at under £5,000.

The company's modems range in speed from 300 to 9,600 bits per second. The new Omnimode 48 modem will be shown as the first in a range of software-based intelligent devices.

Racal-Milgo's CMS 2 is claimed to bring the cost of network management systems within reach of smaller users. It can monitor worldwide networks from any point, alerting the operator to a component failure through a colour graphics display. The network manager can then reconfigure the network through the system. Details of faults can be stored for analysis of network performance.

A new modem is also to be featured by **Codex**. The automatic-answer modem, the UDS V21, fits beneath a telephone and gets its power directly from the telephone line. It is aimed at personal computer users and original equipment manufacturers. The UDS V21 complements Codex's existing modems, ranging in speed from 2,400 to 14,400 bits per second.

Codex will also offer the DNCS network control system, which is suitable for the smaller network user with up to 16 lines. Like the other Codex network management products, the DNCS provides on-line network monitoring, testing and control facilities.

Other Codex offerings include data line test equipment.

Dacom Systems will use Compec as the launching pad for what is claimed to be the first modem in the UK conforming to the international CCITT V22bis standard. The full-duplex, dial-up unit runs at 2,400 bits per second. Other dial-up modems from Dacom handle speeds of 300 (V21), 1,200 (V22) and 1,200/75 (V23) bits per second.

Also new from Dacom is a UK-designed and manufactured base-band modem for British Telecom EPS8 circuits to complement the existing asynchronous and synchronous line drivers for private networks.

Dacom's autodialler, approved by British Telecom, can store and dial 256 telephone numbers. The company also offers an error controller for removing data errors resulting from telephone line noise.

Statistical multiplexers handling four, eight and 32 input channels round off Dacom's display.

Thorn EMI Datatech makes communications equipment in the UK and will show its modems, multiplexers and network management systems. Many of these products have been updated to take advantage of microelectronics and new features include auto-answer and auto-call facilities.

Thorn EMI Datatech is also showing a packet assembler and disassembler for X25 packet switched networks.

General Datacom is looking to the future with mulitplexers for British Telecom's new high-speed digital services. The new Megamux can concentrate digital channels into one link in the BT Megastream wideband service or in Kilostream, the 64,000-bits-per-second sub-set of Megastream.

Virtually any data channel format can be handled by Megamux and a digital voice channel facility is available. The device can handle Kilostream's top transmission speed.

New additions to General Datacomm's Data Commonality modern range are an autodialler and a viewdata modem. The range handles speeds of between 300 and 9,600 bits per second. All the devices are built to the same size, so any mixture of 16 modems can be housed in a single rack 10½ inches high.

General Datacom's Data Switch is aimed at boosting the efficiency of central computers by providing automatic switching between terminals and processor ports.

Tech-Nel will offer rack-mounted or free-standing models handling speeds of up to 19,200 bits per second. Options include automatic calling and answering and problem diagnosis.

Like many other network management system suppliers this year, Tech-Nel is to show a system which is suitable for large or small users. It handles networks ranging from a few channels to multi-site operations. Faults can be diagnosed and the network reconfigured quickly through the system.

Lion Systems Developments has specialist modems for base-band communication and for viewdata devices. Its sharing units allow devices to share lines, modems and ports. Lion's other products include patching, monitoring and switching modules and the Minicad add-on microprocessor which enables a display terminal to control central or remote V24 and VF circuits.

A new multiplexer will be featured by **Timeplex**. The company's Switching Multiplexer allows users to access and switch between separate mainframes minicomputers, word processors and terminal clusters. Among Timeplex's other products is the E/Series, a self-contained, low-cost data concentrator designed to link clusters of terminals to minicomputers.

Timeplex also sells the Advanced Intelligent Modem series of single-card modems offering speeds of 2,400, 4,800 and 9,600 bits per second.

It is perhaps the number of network management systems and line monitoring equipment on show which demonstrates the high quality and sophistication which Compec exhibitors have come to expect from visitors. The professional data processing manager and communications specialist now demand equipment which enable them to get the utmost from their networks.

Data Logic is banking on the high quality of Compec visitors by concentrating on its Intertel 90/10 network management system. Visitors can see whether the product lives up to Data Logic's claim that it is the number one in network management systems.

The company says the 90/10 is designed to bridge the gap that has traditionally separated data communications managers and corporate management by meeting the needs of both.

The system has a central processor, 60 megabytes of disc storage, colour display terminals, a printer and a dial-up diagnostic port for remote servicing. It provides network monitoring, diagnosis and system restoring facilities for the communications manager.

And management reports provide information on performance, maintenance, network trends and so on. Historical data can be called up to provide network planning information. Software can be tailored to users' precise needs.

A portable data line analyser is to be featured by **Communications Accessories and Equipment**. CAE was formed earlier this year to bring closer ties between five autonomous but associated companies: Teleprinter Equipment, Teleprinter Rentals, Morse Equipment, Communications Accessories and Equipment, and General Audio and Data Communications.

These companies are pooling their technical and marketing resources to form a group with a

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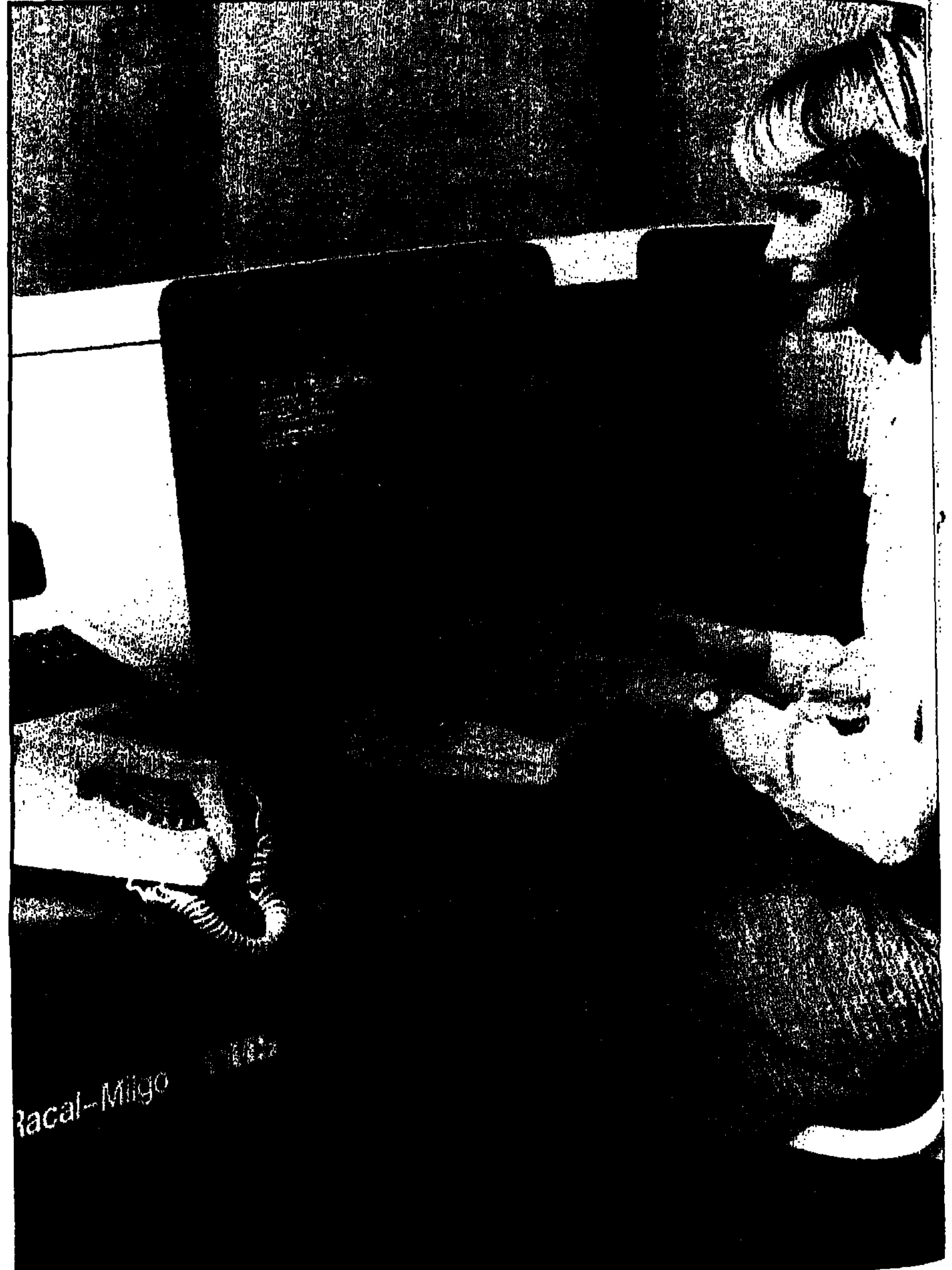
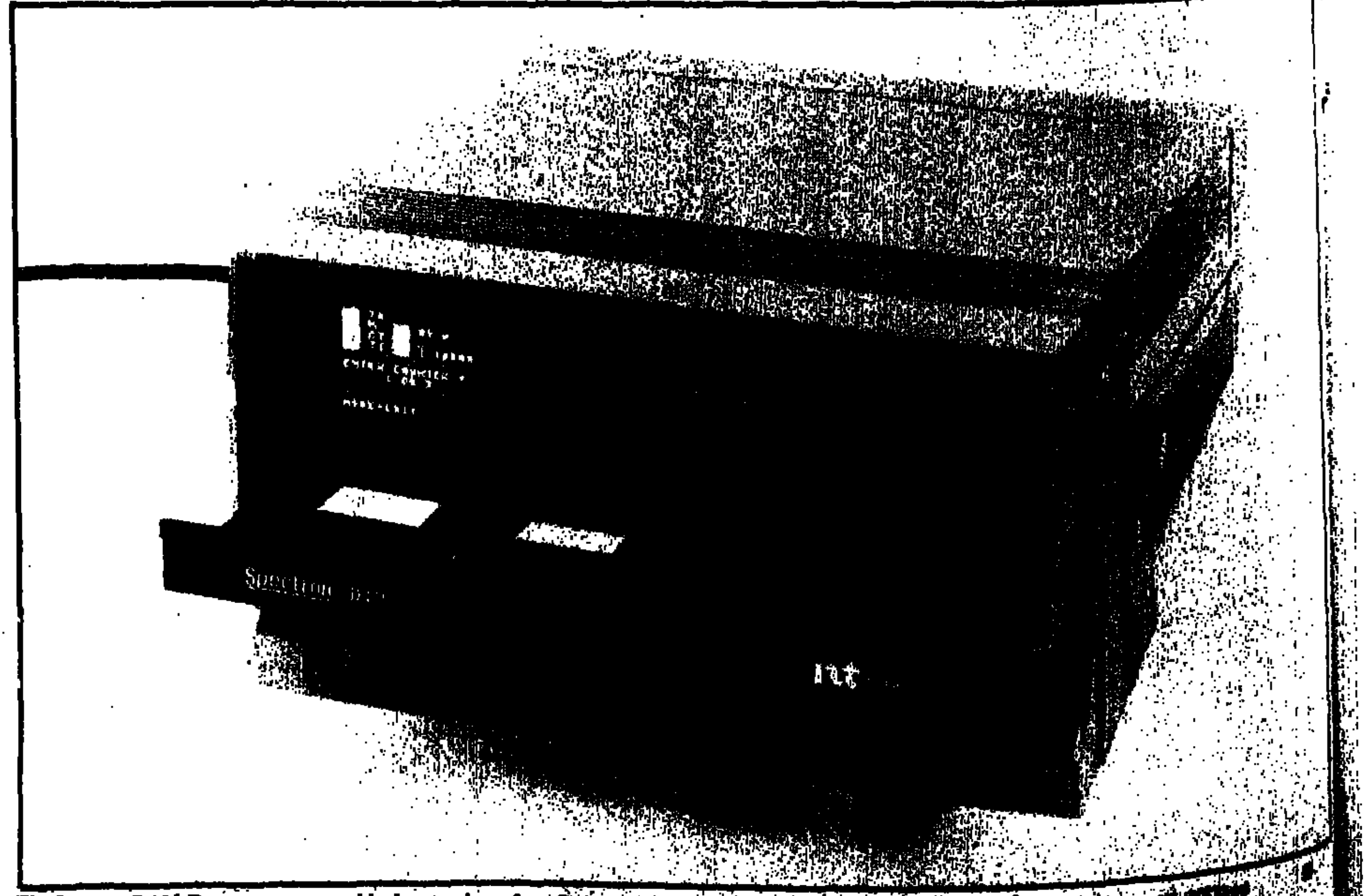


. *Racal-Milgo's CMS 2 is claimed to bring the cost of network management systems within the smaller user's reach.*



The Spectron D101 Datascoper, a portable data analyser from General Audio and Data Communications.

COMMUNICATIONS 4

■ From page 42

projected turnover for 1982 of £10 million and 250 staff, excluding administrative people.

Some of the companies date back to the mid-Sixties. Products range from telex and data terminals to optical character recognition systems, communications components and military and marine equipment.

At Compec CAE will show General Audio and Data Communications' new Spectron D101 Datascope, claimed to be the most powerful portable data analyser available.

Performance statistics for the large network user are provided by the company's Net/Alert product, through a colour graphics display and printed reports. GADC also offers protocol converters and statistical multiplexers.

CAE's Teleprinter Equipment arm will show the new Microprism printer terminal, claimed to offer daisywheel print quality – at under £500. The Prism range also includes colour printers.

Teleprinter Equipment's Victor matrix printing terminals, launched in April, measure just 14 inches by 12 and weigh under 12 pounds. Prices start at £700. They run at 30 characters a second when printing but can communicate at speeds of up to 9,600 bits per second. Print size ranges from five to 20 characters per inch.

Halcyon Data Communications is to launch the 548A automatic line tester. The company says all relevant data on communications links can be measured and stored automatically. The device can be controlled from the front panel buttons, from a remote office or from a computer.

The 801A is a data analyser for field service use as well as for network monitoring. It includes an X25 analysis package which is used by British Telecom for supporting its Packet Switched Service.

The 802A is for more extensive trouble shooting and data recording. Colour output is standard with this model.

Halcyon's 4200 statistical multiplexer can handle 60 channels of synchronous or asynchronous data communication and speeds of 19,200 bits per second. The 4220 version can also handle two lines of 9,600 bits per second.

Other Halcyon products include a multi-computer switch for backup and load sharing and a protocol converter for IBM 3270 applications.

Two line analysis devices will be on show from **W and G Instruments**. The DA-10 is a data line analyser for V24, V28, X20, X21 and X25 standards and simulators are available for other interfaces. The DA-10 is described as a user-friendly device for identifying faults on digital data networks.

The DMS-1 data measuring set tests analogue and digital characteristics of data circuits. The set consists of a level generator and meter, a data circuit tester, a modem test set and an interface tester for X20, X21, X26, X27, V24 and V28 protocols.

Trend Communications supplies terminals and testing equipment. Its new Mini-Tester 100 is a hand-held device which is claimed to be able to perform a range of error and distortion tests normally associated only with much larger systems.

Trend is a major supplier of modern telex terminals to British Telecom, which offers them as the Puma range. The terminal has electronic message storage and automatic dialling and answerback.

Trend's other exhibits include the new 880 printer terminal, with bi-directional expanded and compressed printing, four character sets and speeds of up to 9,600 bits per second.

As organisations seek convergence of different communications technologies the humble telex is coming to the fore as a principal component of the automated office. This year's Compec sees a number of manufacturers offering telex converters and message systems.

Data Dynamics is to show a telex preparation system for the first time in the UK. It is based on the Vitel display terminals and the Zip 585 paper tape reader and punch.

Telex messages can be edited on the display and punched as a five-column tape on the Zip 585. Incoming messages can be directed to the punch or to the display for immediate viewing. Two extra serial ports – eight-level or five-level – can be provided for connection to message switching systems or computers.

Data Dynamics will also feature the Zip range of matrix printers, including the receive-only version, which runs at 30 characters a second and can be used in the office or in hostile environments such as factories.

Facit's new 4045 paper tape reader and punch can also be used to prepare telex messages. The Facit 8105 can run offline as a standard electronic typewriter or online as a keyboard-send-receive printer terminal.

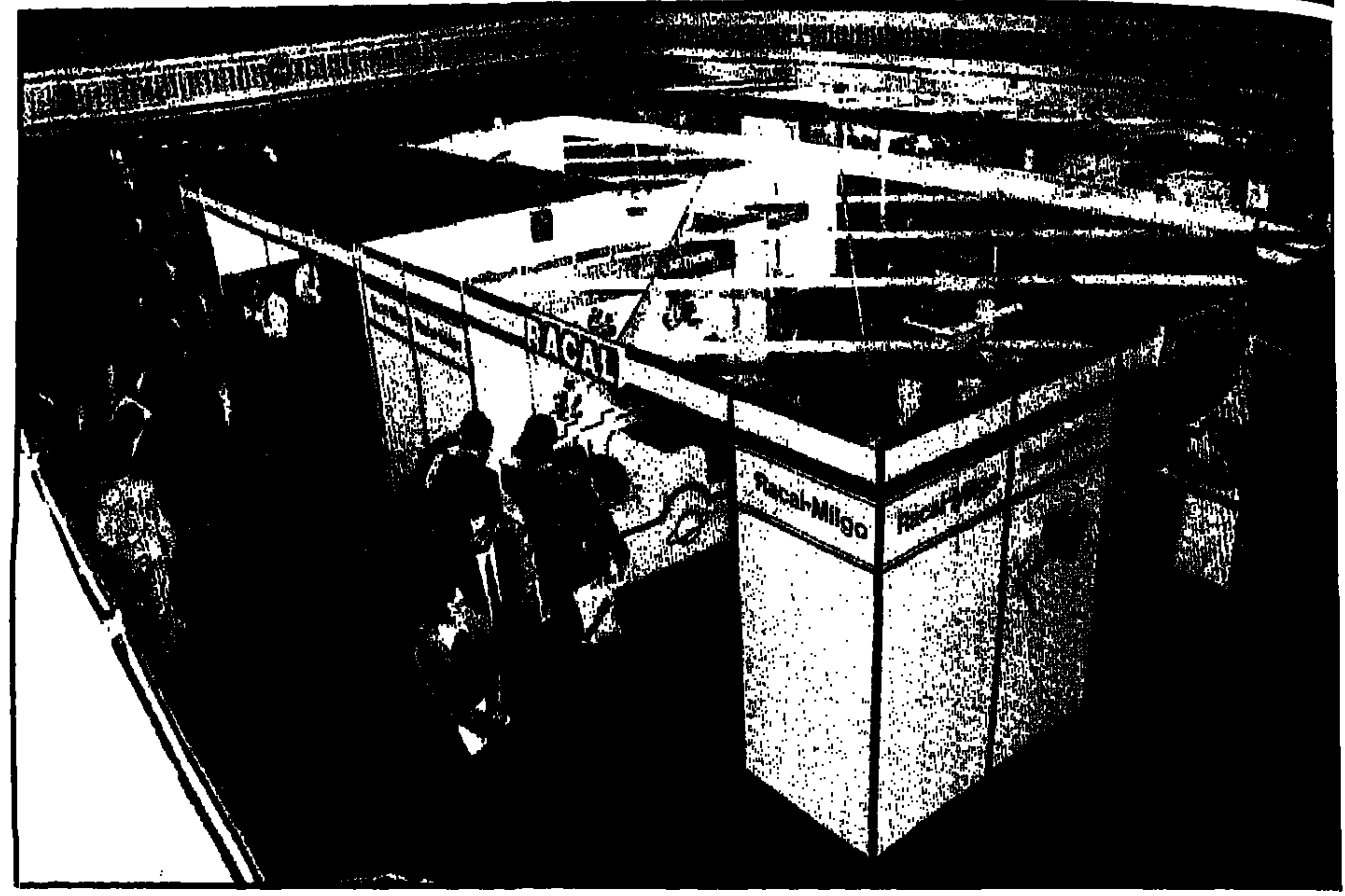
Completing the Facit display will be the 4565, a low-cost letter-quality printer for word processing applications with most mini and microcomputers.

Ferranti's Telex Manager handles message preparation through display terminals, message storage and automatic transmission of messages to the telex network and to distributed terminals. Ferranti says a company with an annual telex bill of £15,000 will recover the costs of the Telex Manager in a year.

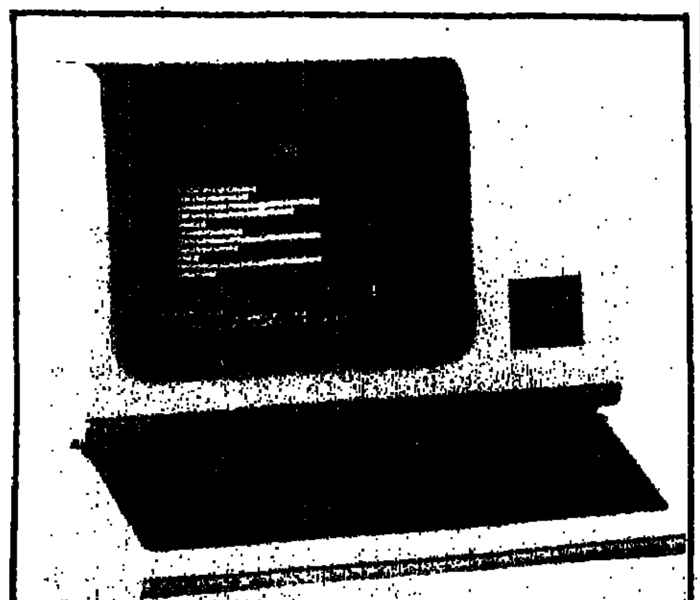
Other equipment to be shown for the first time by Ferranti includes the new PT7 workstation for ICL and IBM mainframe users and the Image Data handprint recognition device. The PT7 is compatible with ICL's CO1 and CO3 and IBM's BSC protocols.

Telex and private wire circuits can be mixed in **Fenwood Designs'** Ministofor message switch. As the smallest system in the Stofor range it can support 14 ports, floppy discs and a 10-megabyte Winchester disc for archiving.

And if all this communications equipment leaves you somewhat bemused, go along to **IAL Data Communications'** stand. The company will be offering complete network design, installation and maintenance services.



Racal-Milgo's Planet network, seen here on its stand at Compec Scotland '82, will also be featured at Wembley.

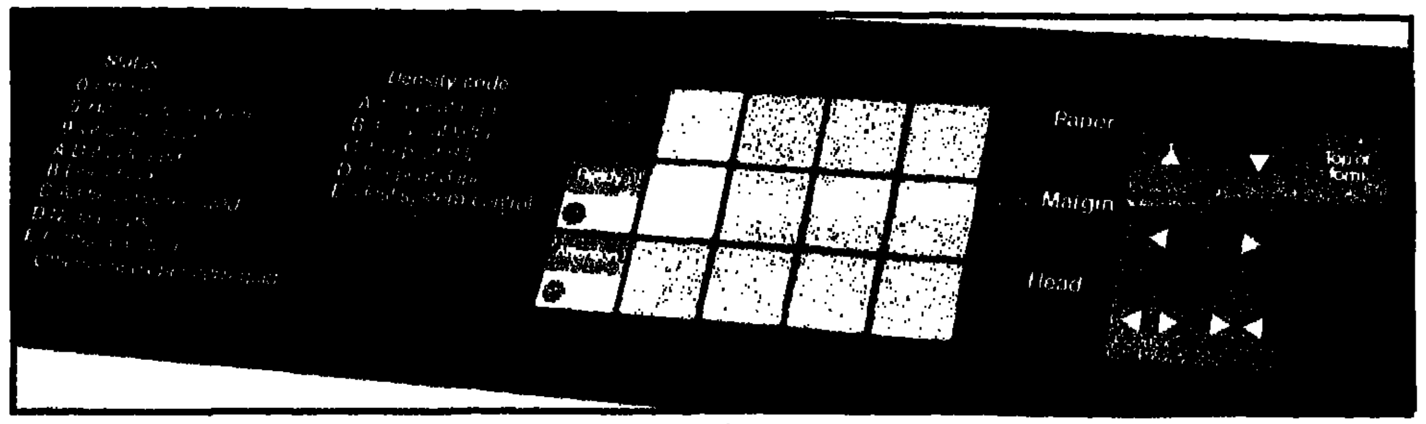


The console of Data Logic's Intertel 90/10 network management system.

PRINTERS 1

Philip Hunter reports on the wide selection on show from manufacturers and distributors

Colour, thermal, inkjet, line: you name it, it'll be there



The simplified operator control and diagnostic panel of Decision Data's 6541-05 serial printer. DD will launch IBM-compatible printers at Compec.

Decision Data 6703 matrix printer.

IF one is looking for printers, a visit to Compec is worthwhile, since most categories are well represented. Colour printers, thermal printers, inkjet printers, matrix, daisywheel and line printers – you can see them all.

Some of the big computer makers are not displaying at Compec, although some of their products will be shown by their distributors. Most dedicated peripheral manufacturers will be there.

There will be several big peripheral distributors at Compec with a variety of printer types and makes on display. **Zygal**, for instance is the authorised distributor for Diablo, Fujitsu, General Electric, Digital Equipment and Hewlett-Packard, and will be displaying daisywheel printers from Diablo.

Also on the Zygal stand will be Rutishauser's automatic sheet feeding equipment for Diablo, Qume and Fujitsu letter quality printers. Zygal also has a representative sample of DEC peripherals lined up for the show.

Another distributor, **Peripheral Hardware**, (PHL) will be showing the Tab 132/15-G interactive graphics terminal, introduced in spring 1982.

PHL also has the Binder and Oki range of printers.

A large range of printers will be on display at the Northamber stand, including Mannesmann, Tally, Anadex, NEC, Toshiba, Star, Qume, Diablo, TEC, Televideo, Hazeltine, Lear Siegler and Rutishauser.

The new microprism terminal made by Teleprinter Equipment will be displayed by the **CAE Group**. This is claimed to offer near letter quality print for under £500.

ICL OEM Sales will have two daisywheel printers on display – the Ricoh RP1600, and the slower, but cheaper RP1500.

Like most parts of the computer industry, the printer sector is well soaked in confusing jargon. There is talk of letter quality, or correspondence quality printers. Then we have near letter quality, daisywheel, and matrix.

Everyone has their own definitions of these terms, but letter quality is generally understood to be a daisywheel printer, or a printer where each letter is completely formed, as by a typewriter. These are the most expensive printers.

The dot matrix printer forms each letter by punching dots on to the paper in appropriate places, selecting the dots from positions in a grid, or matrix..

Some manufacturers have improved the quality of dot matrix printers by making two or more passes over each line and filling in the gaps between the dots with more dots.

These improved matrix printers are often referred to, at least by their makers, as "near letter quality" printers, at a lower cost.

A good range of daisywheel printers can be seen at the stands of distributors, but several companies have them on their own stands. **Qume** has a range of daisywheels aimed at the word processing market, called the Sprint Range. They cover speeds of 40-60 characters per second (chps) and feature the industry standard 96-character and 130 character Qume standard daisywheels.

Transtec Computers will also have a range of daisywheels on display beside its new 64K business computer, the BC2. **Micro Peripherals** (MP) will have the WordStar-compatible F10 models 40 and 55 on show from its Tec range. These can, says MP, be either supplied with Centronics parallel, or RS232 serial interfaces.

MP also claims to be one of the first to beat the £300 barrier for daisywheel with a new bi-directional printer. This operates at only 20 chps, but has proportional spacing with parallel and series interfaces as standard.

Japanese company **Brother** brings a 96 character daisywheel to Compec. By using a cassette system, daisywheels can be easily changed to give a new typeface.

Daisy Terminals, as its name suggests, will have a few daisywheels on show, with models running at 35, 45 and 55 chps. These include twin-track and wide cartridge design. A twin-track unit with VDU display will also be working on the DT stand.

Dataproducts has a new family of daisywheels, the DP Series. There are two bi-directional

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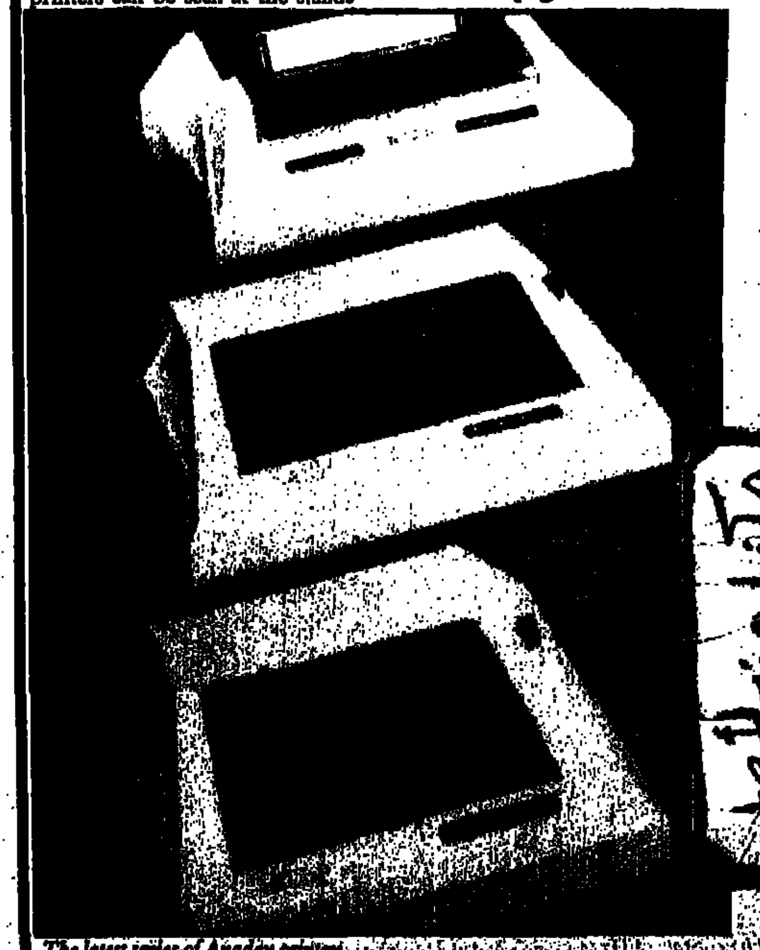
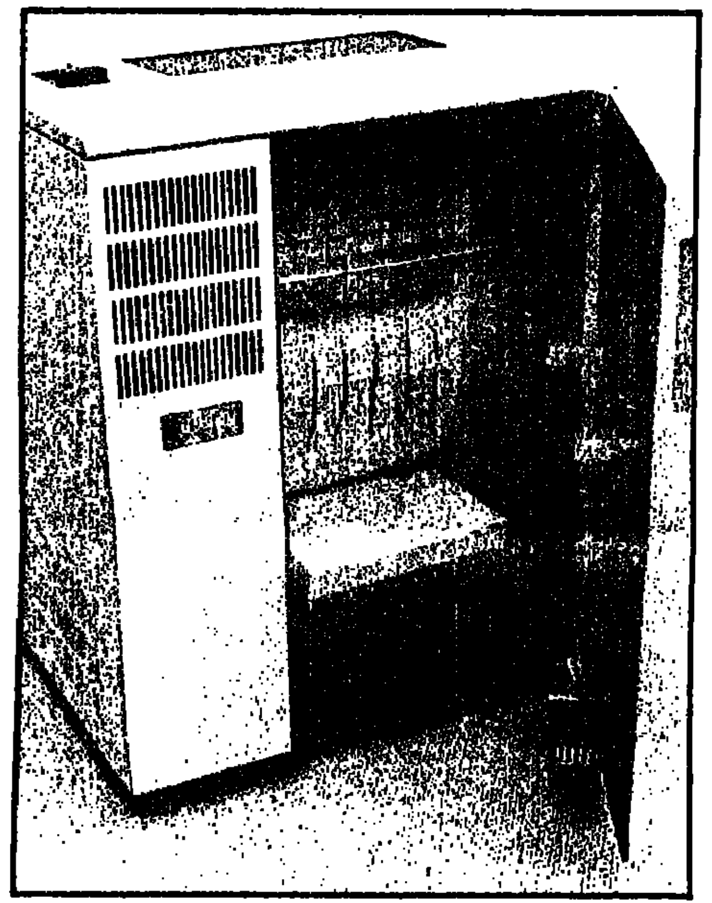


The latest series of Anadex printers.

PRINTERS 2



The new series of band printers from Decision Data consists of the Model 6807 and the Model 6814, designed for the IBM System 34 and System 38.

This year Mannesmann Tally will be showing enhancements to its MT100 family, to which the MT140S and the MT140C have been added.

Epson is showing a range of dot matrix printers.

■ From page 45

models, the DP35 operating at 35 chps, and the DP55 at 55 chps.

Distributors with daisywheels to see include **PHL** and **Geveke Electronics** with Diablo models. **Butel Comco** will be showing what it calls a personal daisywheel printer from Smith Corona.

There are five main issues to consider when buying a dot matrix printer: speed, type quality, noise, reliability and cost.

Typical speeds are 100 or 200 chps, as opposed to 30 or 40 chps for many daisywheels.

Different manufacturers emphasise different qualities, although type quality and cost are top of the list.

But one company making a song and dance about the noise – or lack of it – made by its matrix printer is **Anadex**. Its A Series DP-9500A and DP-9501A operates at less than 55 decibels, it claims.

The DP-9620A, on the other hand, is being sold on the strength of its high resolution dot-addressable graphics. This provides draft quality print at 200 chps, and correspondence quality, with two passes over each line, at 100 chps.

Speed is the selling point of the S-700 Vario Printer from **Real Time Developments**, which will operate at up to 390 chps. It holds up to 12-character fonts and has a full control panel, and 2K buffer with switch-selectable command languages and format controls.

Cheapness and reliability are emphasised for the Trend Printer 880, made by **Trend Communications**, a subsidiary of Phicom plc. This prints at 100 chps bi-directionally using a 7×5 dot matrix, and is available in receive only (RO) and keyboard send receive (KSR) versions.

Three character sets are standard, including full upper and lower case 96 character UK Ascii, and alternative 96 character set, and a 64 block graphics set. It can print expanded and compressed characters on various column widths at five, ten and 20 characters per inch.

The Print Swiss series of matrix printers made by Wenger can be seen at Compec for the first time. They will be displayed by a new company set up to distribute them in the UK, **Swiss-Tek**.

Print Swiss printers have been developed for OEM purposes, and are available in RO and KSR configurations. All models feature a 9×10 dot matrix, and 96 Ascii character set.

Another distributor of particular interest to dot matrix fans is **Thame Systems**. On its stand the new Toshiba 24-pin matrix printer can be found. Like several others on display, it operates at 100 chps for near letter quality, or 200 chps for draft quality print.

New Japanese printers can also be seen at the **Mitsui Computers** stand. The company will be showing its MC 2100 and MC 4100 series dot matrix printers for the first time. These offer pin-addressable graphics, 167 character set, and touch sensitive control keys. Mitsui in keeping with Japanese reputation, has gone for reliability. Its nine-pin head is guaranteed a strike life of 100 million characters.

Exclusive UK distributor for the Quantex range of dot matrix printers is **Mellordata**. The 705 multimode printer delivers draft quality at normal speeds, but near letter quality is slow, at 37 chps.

A range of upgraded ASR and KSR dot matrix printers will be displayed by **Data Dynamics** during its first UK demonstration. DD will also be displaying the [illegible] RO, which can be used with the DD-Vitel terminal. It is aimed as much at factory environments as the office and is housed in a metal case.

A new deluxe matrix printer with two-colour letter quality facility will be shown by **Itoh**. The model 8600 printer is an 18 needle printer, capable of delivering 80 columns standard, or 136 columns of compressed font.

Five Ascii alphabets are included: US, UK, German, Swedish and Greek. There are eight character sizes, including two that are proportionally spaced. Itoh will have two other dot matrix printers on show, the 8510 with bit-image graphics, and a 136 column version, the 1550.

One of the big name companies with a new range of matrix printers is the US firm **General Electric**. The new GE 3000 series designed specifically for the OEM market is shown, with six models operating at speeds from 180 to 500 chps. Virtually all applications needs are covered by this range, claims the company.

All models allow near letter quality printing, and will print up to six forms at once.

The data products division of **Facit** claims to have made an advance in matrix printer technology with a friction-free flex-hammer print head. The Facit 4542 includes a 9×14 matrix, with variable size characters and two-colour printing. The Facit 4526, which is a 9×9 matrix can also be seen.

Epson UK is exhibiting a range of dot matrix printers at one of its two stands. But this is rather overshadowed by the company's new HX20 portable computer on the same stand, a machine the size of an A4 notebook. Two of these computers must be won on each day of Compec in a raffle.

Electrographic has its range of dot matrix printers on show, with controllers to link with Ascii

■ Turn to page 47

PRINTERS 3

■ From page 46

parallel or serial. The range includes models for 40, 80 and 136 columns, all of which can print graphics, bar codes or extra large characters on request.

Options include paper take up units, guillotines and adhesive label dispensers.

The largest UK-owned peripheral maker is **Newbury Data Recording** which was formed in May this year from a merger of Data Recording Equipment and Newbury Laboratories. NDR is the largest exhibitor at Compec this year, with two stands, and more than 10 different matrix printers.

These range from the 8510 model for 80 column printing at 125 chps for £480, to the 8850 for about £2,200. The 8850 prints at 400 chps, or 300 lines per minute if you prefer. "This will easily beat equivalent band printers on price," claims Newbury.

At the same time, it has the advantages of flexibility and software-controlled character fonts.

Another new Newbury offering is what it calls a Diablo compatible matrix printer. This is presumably another way of saying it is near letter quality, aimed at capturing the word processing market.

Called the 8930, this is a 132 column, 12 needle printer, operating at 240 chps, or 120 chps for near letter quality, and costs about £1,700.

An 18 needle 80 column near letter quality printer is also being launched by Newbury for £700 aimed at the bottom of the word processing market.

No show of printers would be complete without the world's biggest company dedicated just to them – **Centronics**. For several years the company has been shouting about a Quietwriter it is developing based on "revolutionary technology". The printer public is still waiting for this, but nevertheless Centronics will have five new printers on show for the first time in the UK.

The latest member of the 350 matrix series is included.

This is the 351, which produces high quality proportional printing at 65 chps, or draft output at 200 chps. The 351 also has graphics, eight character sets, six founts, and fan fold paper handling and demand document printing.

The 351 has a module that allows the mode of the printer to be changed for new functions or applications.

Possibly the closest rival to Centronics among companies whose main product line is printers is the German company **Mannesmann Tally**. Several new dot matrix printers will be on display at its stand, including enhancements to the MT100 family.

The MT140S has been developed for Sirius and Victor 9000 microcomputers. The MT140C has been designed for compatibility with Commodore microcomputers.

Already in the MT100 family are the MT120 and MT140L dual-mode models, delivering high-quality correspondence print at 400 chps, and draft quality at 160 chps. This is slower than some rival models, but Mannesmann claims that high dot-density and graphic capabilities for bar charts more than compensates.

The Mannesmann dot matrix printers will be demonstrated with various optional extras, including sheet feeders, front font mechanisms and multi-colour ribbon systems.

One of the fastest line printers on show will be the new CII-HB PR.54 from the recently nationalised French giant CII-Honeywell Bull. This has a speed of 1500 lines per minute, and can be seen both at CII-HB's own stand, and at the stand of the distributor Euro Electronics.

Intermec has two new printers on show – the Model 8610, capable of delivering tables specified by any one of eight codes that can be chosen by the user, and the S35, which prints up to 10 lines of normal text as well as high density interpretive text.

Then we are back to the two giants Centronics and Mannesmann Tally, which both have new line printers on show. Centronics may not yet have the Quietwriter, but it does have a new band printer, which it describes as the quietest band printer yet. This is the 6085, capable of delivering 600 lines at less than 50 decibels, considered by many to be the working limit for an office.

The 6085 also offers a variety of fonts and a hermetically sealed control panel.

Centronics will also be showing a new range of heavy duty band printers, the 9380 E-Series. There are four models working at 300, 600, 900 and 1,200 lpm. The latter two are on show. They all have 64 and 96 character sets as standard, and 48 and 128 character sets can be added.

Mannesmann Tally will be showing its new MT660 line printer from the MT600 family. This is also quiet, claims Mannesmann, with optional graphics and four-colour printing.

One company that comes into a category of its own is **Decision Data**, which will be launching a family of IBM plug-compatible printers into the UK for the first time. The Model 6703 is claimed to be a cheaper alternative to IBM's 5224 and 5225 matrix line printers for the System/34 and System/38.

A dual print head provides a range of speeds up to 300 lpm at 74 characters per line.

DD will also be launching two new band printers as alternatives to the IBM 3262 band printer. These are the first two models of the new 6800 Series, again for IBM System/34 and System/38.

There are four other smaller categories of printer worth considering as separate groups. These are label writers, thermal printers, colour printers and inkjet printers.

First labelwriters, which above all need to be flexible because labels come in all shapes and sizes. **Weyfringe** claims to have developed a new approach to this art with a computerised free-format printer called Labelwriter. Users can choose their own formats for up to ten different label shapes, unlike past label printers which forced the manufacturer's format on the user.

Labelwriter has local intelligence built into a Z80 microprocessor. The user can format the label with fixed lines of text which can be interspersed with information entered from the keyboard.

Two companies will have thermal printers on show. **Dean Electronics** will be exhibiting the SP40/42 series of thermal printers for the first time, featuring 40 column printing at either 120 or 240 lpm. The mechanism used is made by Olivetti.

Philips Data Systems will have its Copy 80 thermal printer on show, which operates at 240 lpm.

Philips will also have an ink jet printer on display, the P2131. This needs no special paper, and has national character sets and graphics available on 250 mm width.

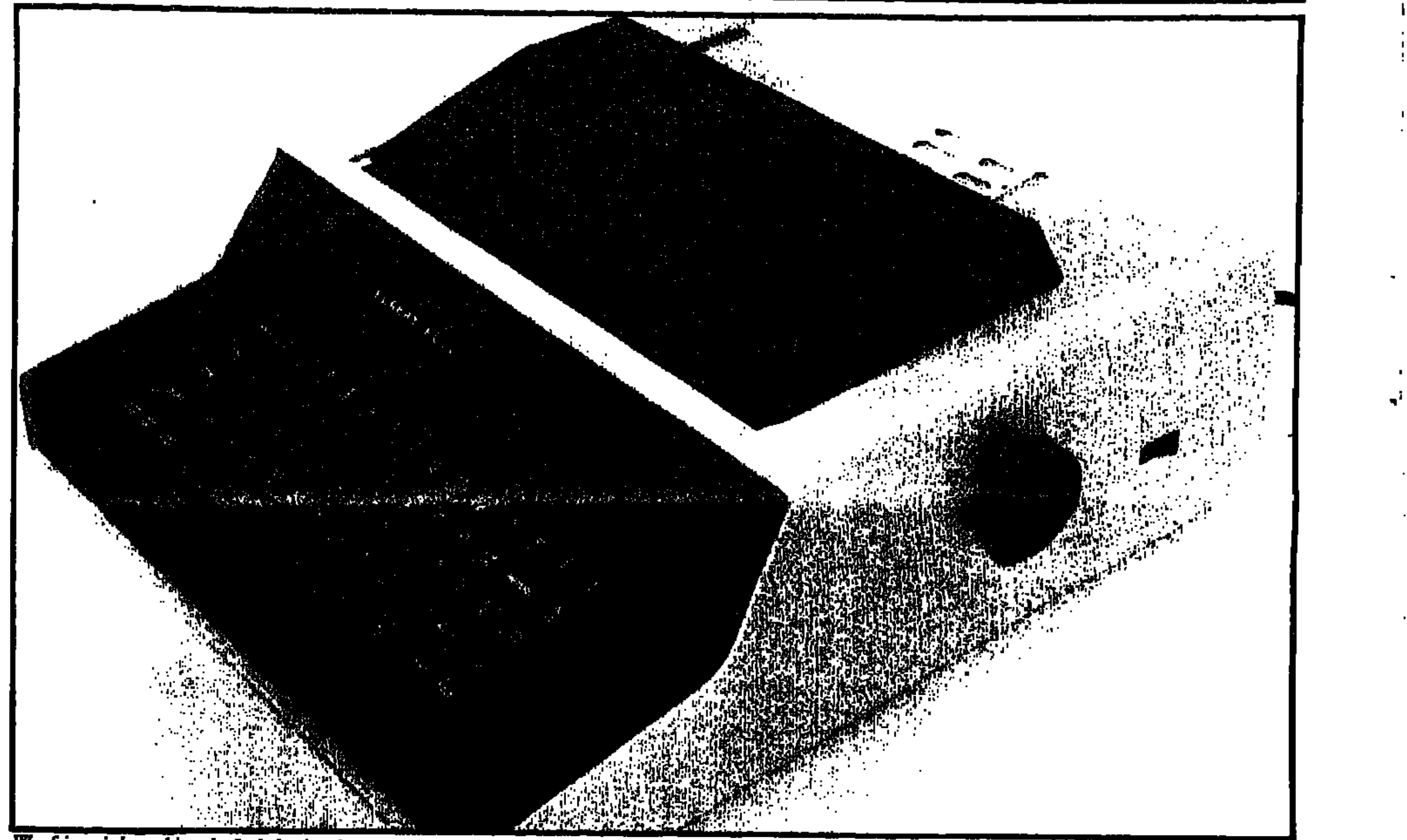
Colour printers are on show at several stands, including those of Centronics, Mannesmann Tally, and the distributor **DN Computer Services**.

DNCS will be showing the CX80 colour printer, which is a matrix machine that can also operate as a normal printer. When printing in four colours, it operates at 125 chps.

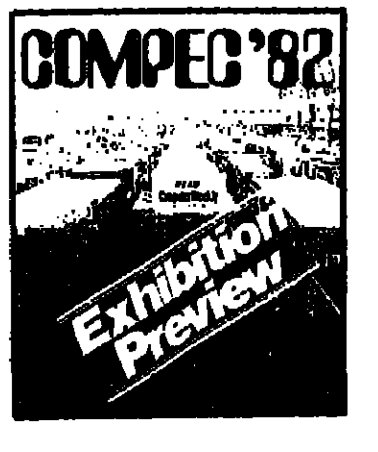
A viewdata link is now available for the CX80. This will dump a viewdata screen in full colour to a viewdata terminal. The CX80 range costs from £495 to £970.

Mannesmann Tally offers optional four-colour printing on its MT600 family of line printers, and on the MT400 range of serial printers.

Centronics will be showing a new colour graphics printer, the Model 706C, developed for the CAD/CAM and process control markets. This is a matrix printer with pin-addressable graphics. Like most colour printers, it can print in black, red, blue and green, and has the added capability to mix colours on the same line.



Weyfringe is launching the Labelwriter free-format label printer.



Variety, says Richard Brown, is more likely to help than hinder prospective buyers of media

Compec's peripheral roots are still diversifying and attracting them like magnets

COMPUTER shows are rather like musicals. There are the small affairs, attended by the old stalwarts and the young hopefuls, attracting similarly small and mostly unenlightened audiences who, in all probability, will leave during the interval.

Then there are the more select, specialised shows, with more than competent performers and a dedicated following of visitors. And then there are the large, brassy, Broadway ventures — all-star leading parts, a solid core of professionals, and scores of extras, musicians and such, playing daily to packed houses.

Compec is, in these terms, a Broadway show. It gets larger and brassier, more confident though more packed, every year. There are more exhibitors, more floor space is covered, and there are bound to be still more people milling around, and still more kids glued to the Atari stand.

But the visitor should not despair. There is, after all, a lot to see, and much that will be of specific interest in the many specific product areas that Compec covers.

The magnetic peripherals market in which Compec has its roots is, even taken on its own, rather large and extremely diverse. It covers Winchester disc drives, floppy drives, tape cartridge drives, subsystems, controllers. It can further be broken down into proprietary equipment, industry standard interface equipment, and plug-compatible equipment. It comes in a wide range of capacities, performance, and physical size.

This diversity, however, is likely to render the task of the prospective buyer at Compec easier rather than more difficult. Buyers, more often than not, will know how much they expect from memory storage as well as the conditions in which it will operate when installed. They then choose the type of drive they want, decide whether or not they would like its capacity to grow as the system grows, isolate a range of price/performance within which they are prepared to move and proceed accordingly.

Large systems and even some small ones, need large (or fairly large) amounts of memory storage, and the user here might opt for Winchester storage. There are a number of companies involved in the manufacture of these products — it is, after all, a popular and expanding market — and many of these companies will be at Compec.

Market reports indicate that, although the floppy drive market is likely to maintain its lead as the most popular form of memory storage in the next five years, the percentage growth in Winchester sales will be large. Figures for Western Europe in one report indicate an average annual growth between 1980 and 1986 of 45% for eight-inch drives, and as much as 228% for 5¼-inch models.

The smaller drives by 1986 will number 250,000. The reason for this massive growth lies in the corresponding expansion of the desktop computer market, a market where large amounts of memory if needed must necessarily be compact.

Microcomputers abound in business applications, and 5¼-inch Winchesters are accompanying them into the office. Eight-inch models are geared towards the same environment, but traditionally find their biggest single application in small business configurations.

The potential user, therefore, has further criteria to consider. Powerful desktop machines may require Winchester memory, but there are limits to the amount of storage space they can fill economically. It is worth looking at what's on offer.

Rodime, the only UK-based manufacturer in this area, will be on the **Independent Computer Engineering** (ICE) stand, and will show a range of 5¼-inch models. Unformatted capacities available range from 6.67 to 26.67 Mbytes. Newly announced drive models — the RO206 and the RO208 — have unformatted capacities of 40 and 53.34 Mbytes and an average access time of 50 ms.

The drives require no electrical or mechanical adjustments and offer thermal compensation, rotary head positioner and microprocessor control with on-board diagnostics.

ICE itself will be showing Winchester subsystems for the more determined user of microcomputers such as Apple II and III, Sirius/Victor, the Superbrain, British Micro, Cromemco and the IBM Personal Computer. There will also be a tape streamer on offer called Image, which can back up the contents of Profile, the Apple III hard disc, on to a removable tape cartridge in under three minutes.

Other well known Winchester manufacturers will also be present, including Kennedy, Micropolis, Pertec and Priam. Kennedy (stand 8166) will be demonstrating for the first time the Positrack rotary-actuator system, which is incorporated into its Model 7300 eight inch drive. Positrack, Kennedy claims, improves head positioning and track following while reducing power requirements and heat dissipation. It also eliminates inaccuracies caused by pivot-bearing tolerances and arm resonance.

The voice-coil-type actuator is located near the read/write heads, instead of at the opposite end of the positioner arm, and this provides close mechanical coupling for Kennedy between actuator, servo head and read/write heads. The 7300 is the same physical size as an eight-inch floppy.

Other Kennedy Winchesters on show will include the 6170 series, another family of eight-inch drives, offering 24 or 40 Mbyte capacities, and the 5300 series of 14-inch drives. The 5300 series units have an integral power supply and supply 70, 80 or 160 Mbytes.

Pertec will be featuring three new products this year, among which will be a Winchester storage unit called Trakstar, available in three model capacities — 35-56 Mbytes, 67-3 Mbytes and 84-one Mbyte. All three models offer switch selectable hard formatting up to 1,024 data bytes per sector, 500 tpi, a 45 ms average access

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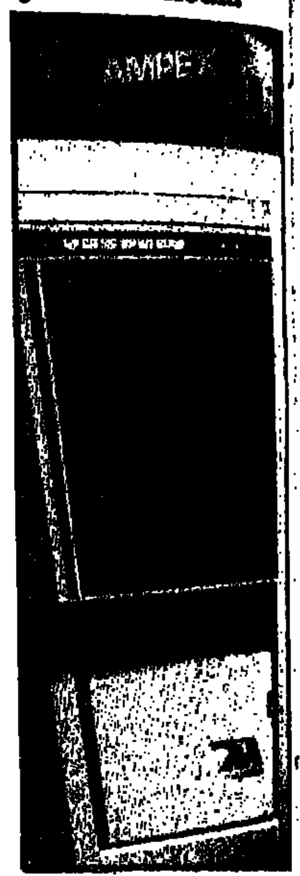
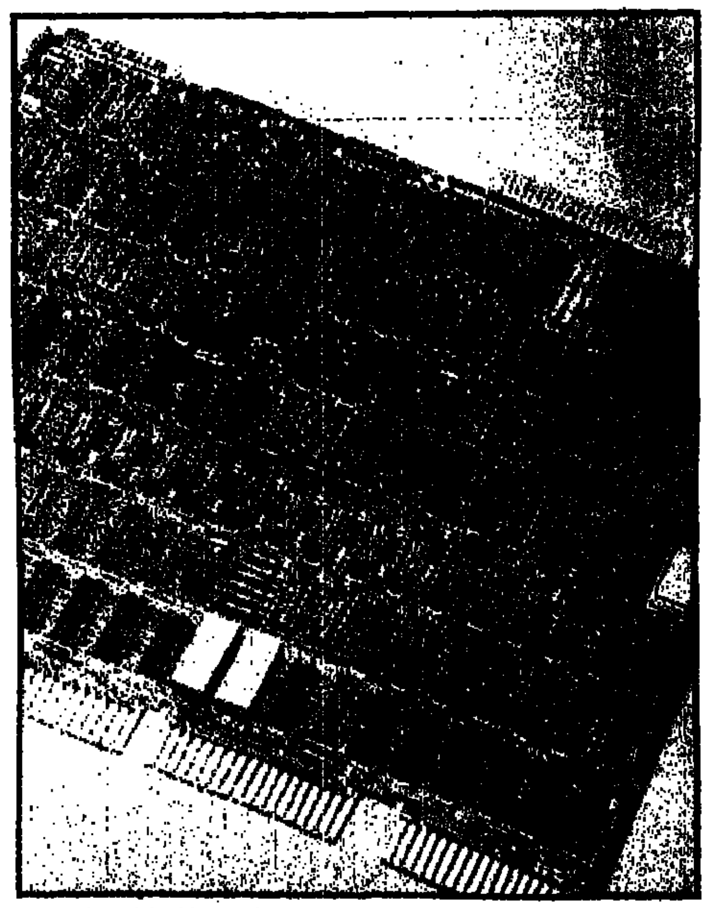
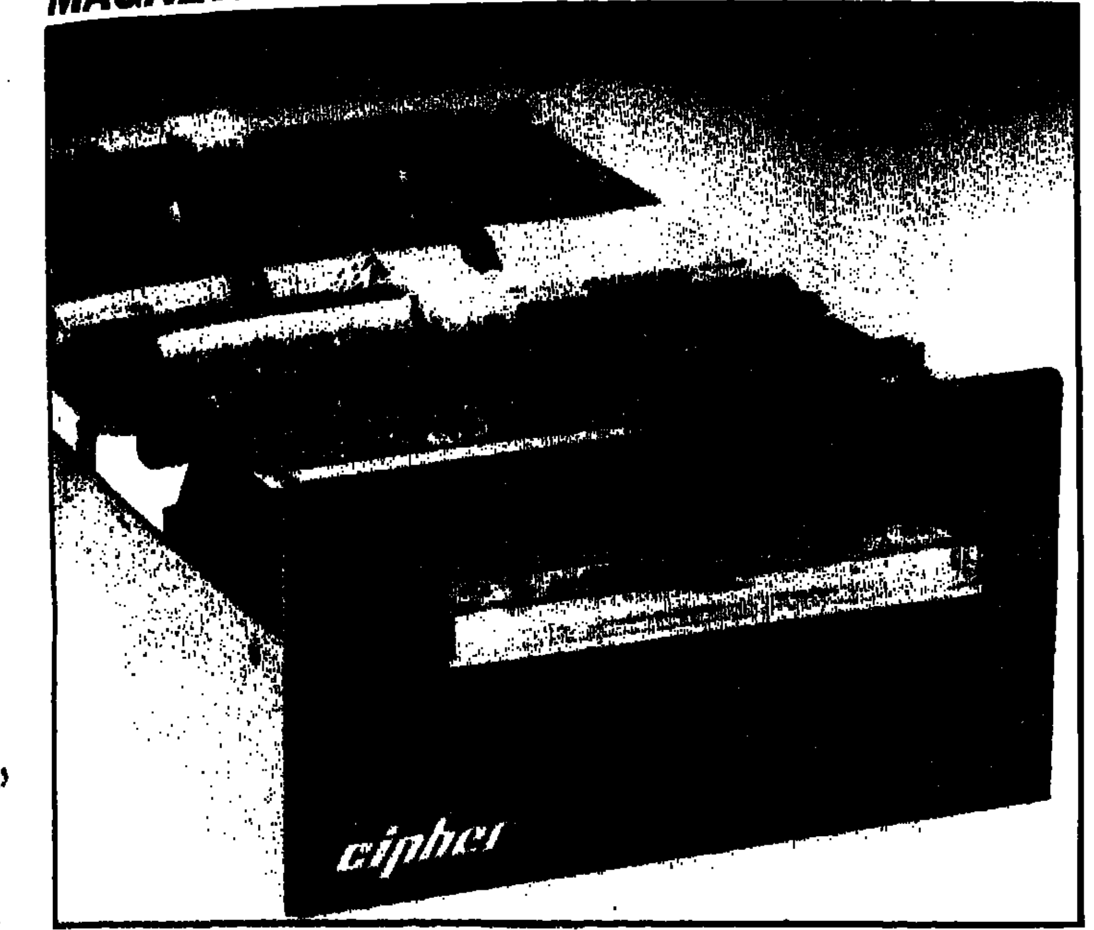


Ampex Megastore.



TC-30 board for Western Peripherals' mag tape streamer controller.



Cipher has a number of products on display, like this tape streamer.

■ From page 48

time and an MTBF of 25000 hours.

Priam's Winchesters range from 34 to 158 Mbytes in capacity. These are largely eight and 14-inch models, although a recent addition to the range is a 50 Mbyte 5¼-inch version. A further addition is the 100 Mbyte eight-inch drive. Priam's European subsidiary is based in Reading, and offers sales and services to Europe, Africa and India as well as to the UK.

Another large American manufacturer of Winchester drives is **Micropolis**. It will also be announcing new products for Europe — the 5¼-inch 1300 series in 17, 35 and 52 Mbyte versions, and the eight-inch 1400 series. The 1400 series, using the Micropolis Intelligent Interface, provides a capacity of up to 200 Mbytes and will be available in OEM quantities early next year. The eight-inch 1200 series is also exhibited.

The prospective buyer of Winchester drives may, however, have more particular needs in mind. Established Winchester manufacturers offer proprietary or industrially established interfaces, but are not necessarily geared towards supplying drives aimed at users of a specific manufacturer's hardware.

Users of DEC hardware at this year's Compec will find a wide range of hard disc options open to them, and, with fairly recent additions to the VAX range of minicomputers at both the top and bottom ends, it is at the VAX market that many Winchesters and Winchester-based subsystems are aimed.

Data Design Techniques, for instance, will be showing a range of subsystems. The DSD 880 DEC-compatible Winchester system comprises a 31.2 Mbyte eight-inch Winchester with floppy disc back-up in a 5¼-inch high chassis. Installation and on-site warranty for this system are available direct from DEC. LSI-11 and PDP-11 systems are also available.

A new range of UK manufactured add-on Winchester disc based storage modules for PDP-11 Q Bus based systems can be seen on the **Christie Data Products** stand. These modules offer 10 and 20M bytes of data storage capacity and directly emulate RLO1, RLO2 or RKO5 disc drives. DEC-compatible storage subsystems are also available from among others **Darkcrest, Fungus Computer Products, Dataram** and **Monolithic Systems**.

Monolithic's Buccaneer, recently announced and on the Arrow stand, extends the memory of the LSI 11/23 to a maximum of four Mbytes. The Buccaneer handles both 18 and 22-bit addressing devices while maintaining total software compatibility with RSX11-M and RSTS-E. Most applications software developed on a PDP-11/23 will run without modification.

Alongside the companies producing subsystems for DEC kit are those showing controllers which allow users to add magnetic peripherals as they choose. These include **Emulex**. Emulex's mass storage peripheral controller line-up will include the V-Master/740, a system chassis which houses two PCBs containing basic interface circuitry to the internal high-speed synchronous interconnect.

Within this chassis either one or two separate, independent massbus-compatible peripheral controllers can be installed. The V-Master/780 may be located in the host VAX-11/780 cabinet, using mounting space allocated for a standard DEC RH780 Massbus adaptor (MBI) or the SBI bus terminator.

Dilog, will display a range of DEC-compatible data storage interface products. These, Dilog claims, demand minimum bus space requirements and offer automatic self testing and fully emulating DEC software compatibility. The company opened a European operation in the UK last year. Features common to the product family are built-in proprietary bipolar microprocessors, a FIFO buffer for DMA latency, single board units which fit into single LSI-11, PDP-11 or VAX-11 slots, and RK, RL, RM, RP and RX disc emulations.

There are, of course, many other magnetic peripherals controllers available. **Data Design Techniques**, as well as Winchester subsystems, will be exhibiting the DSD 700 series single board controller. The series is Multibus compatible and supports up to two 40 Mbyte Winchesters, two one Mbyte eight-inch floppy discs and a 20 Mbyte quarter-inch cartridge tape streamer. Chassis configurations are 10 or 40 Mbyte Winchester with floppy or cartridge tape back-up.

Wesper International offers a wide range of controllers for most types of magnetic medium. These are manufactured by a subsidiary company, Western Peripherals, and include the TS-6251 GCR streaming tape controller for DEC PDP-11 and VAX Minibus computers. The TS-6251 super controller is a TS 11 emulator, a 6250 bpi (GCR) controller and a software compatible streamer controller for streaming half inch drives. The device is configured on a single board; and it has a 64 Kbyte memory that performs like a large data buffer in stop/start mode and as a multi-block staging buffer while streaming.

Another streamer-controller, the TC-50, is also designed for use with PDP-11s. Like the TC-50, announced in September, the TC-30 interfaces streaming tape drives from Cipher, Kennedy and Control Data. It is designed to accommodate drives from Pertec and Ampex as they become available. Other Western Peripherals controllers interface with IBM series/1 computers (for magnetic tape), and with Data General and

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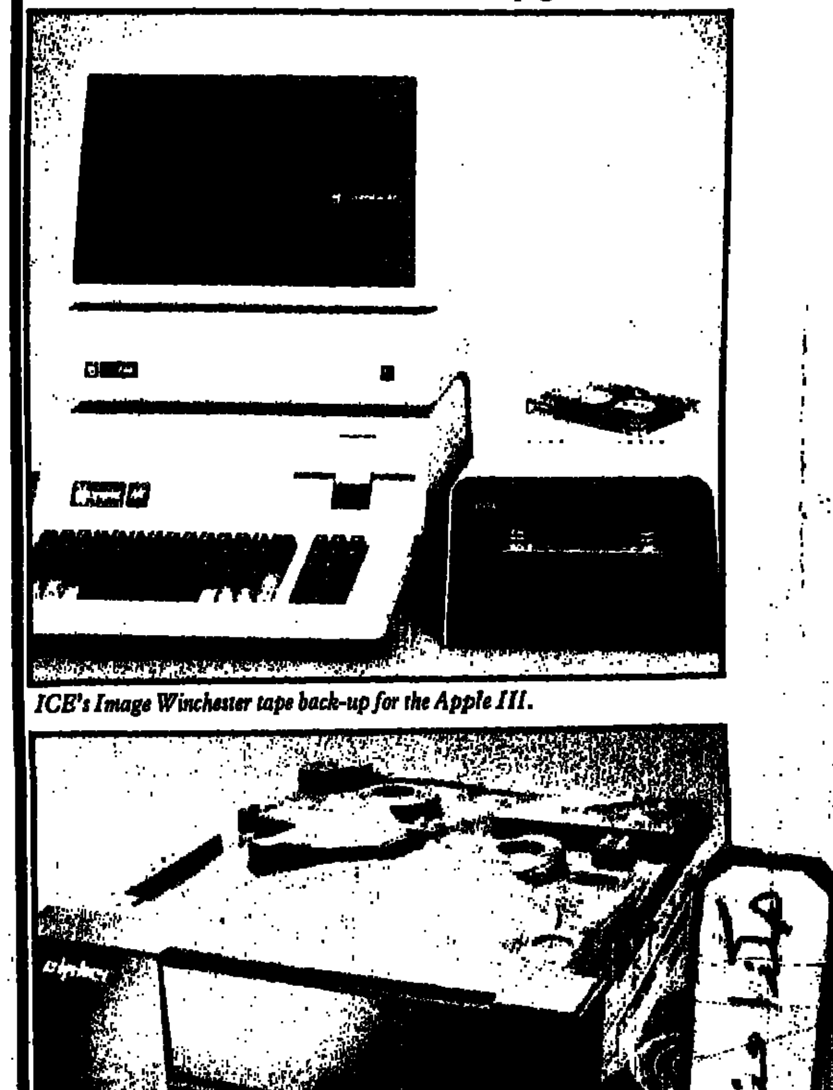
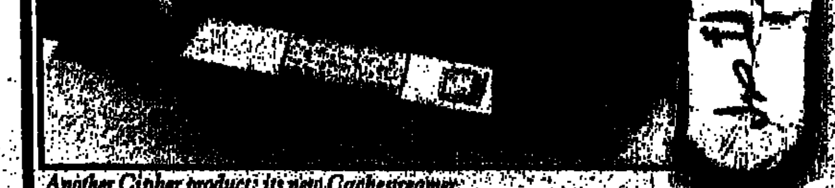


ICE's Image Winchester tape back-up for the Apple III.



Another Cipher product: its new Cachestreamer.

■ From page 49

DEC minicomputers (for SMD controllers).

Data General and DEC CPUs as well as Multibus computers are also catered for by controllers from Xylogics.

Xylogics controllers support SMD drives from Control Data, Ampex, Ball and Century Data as well as drives supplied by Fujitsu and CII-Honeywell Bull. Xylogics also supplies controllers for standard 800/1600 bpi tape decks as well as for the latest half-inch streaming devices from Cipher, Control Data and Ampex.

For the popular micro market, Euro Electronics supplies controllers: the DTC range for 5¼-inch and eight-inch floppy drives.

Streaming drives have not been left behind by Winchesters. If anything, these devices and the controllers that accompany them are in market terms growing directly as a result of Winchester market expansion. Magnetic tape discs and tape cartridge drives are frequently used as back-up units for hard discs in small computers and small computer systems.

ICE's Image unit, backing up the Apple III's hard disc, will be one of many examples on show at Compec. Market growth, here too, is healthy.

Cipher Data, a world major manufacturer of low-cost tape drives, will be introducing new products at Compec. The show will see the formal release of the Cache streamer, a half-inch tape drive operating anywhere in the range 25 to 40 ips. The Cache streamer employs what Cipher calls an Electronic Capstan, which consists of a 64K "elastic" RAM (Cache) in which data is stored up or downstream of the physical read-write head. By absorbing the access and speed ramp time variations associated with streamer mechanics, the drive appears as a start/stop drive at the interface.

Digi-Data will also exhibit new products. The Series 2000 streaming tape drive reads and records 1,600 bpi data at 100 ips or optionally at 125 ips, while the dual density unit also transfers 3200 bpi data at 50 ips or optionally at 62.5 ips.

Pertec's new models are the Starstreamer and the T1000 tape drive subsystem. Starstreamer features include auto load, dual speed, on-board diagnostics, a dual density option and ANSI and IBM compatibility. The T100 series offers vacuum column tape path, auto load, read after write, dual density and 75 ips and 125 ips speeds.

Other streaming products to be shown include Tandberg's mag tape systems from Farnell International, Qantex's drives from Euro Electronics and the UK manufactured EMIstreamers from Thorn EMI Datatech. There are three EMIstreamers in the streaming tape range-8900, 9800 and 9900, all of which use half inch tapes, plus a cartridge streamer, the 9700, which uses a 3M-type quarter-inch tape cartridge.

Control Data at Compec this year will be releasing products which were first announced at the NCC in Houston in the summer. The Sentinel quarter-inch tape cartridge subsystem records 50 Mbytes of formatted data on a standard CD300XL 450 ft tape cartridge.

Sentinel's tape speed is a conservative 55 ips, but the unit's capacity is high and is the result of an 11-track serpentine recording technique. Control Data sees the Sentinel acting as a back-up for 30-60 Mbyte fixed drives. The unit, surprisingly, perhaps, is the same size and has the same mounting as standard eight-inch floppy drives.

Other products new to Europe from Control Data are fixed and floppy disc drives.

Mini floppy drives are lately even more mini. There has been a spate of micro floppy drive announcements recently. All of these are three-and-a-fraction inches; and this is likely to cause confusion if the market for them grows as their backers predict.

There are also the slimline versions of 5¼-inch floppy drives. These generally have the same capacity as the full size models – normally about half or one Mbyte unformatted – but differ in the extent to which they may be termed truly slim.

The buyer of floppy drives is, however, spoilt for choice. The floppy market has traditionally been the first to which the desktop micro user turns. Figures for Western Europe in 1980 indicate unit shipments of 610 000 drives, and in four years' time this number may well have more than trebled. In the short term, at least, it seems that floppy disc units are in a secure position. They are selling, they are spreading, and they will be out in force at Compec.

Among the main floppy manufacturers exhibiting at the show will be **Tandon, BASF** and **Micro Peripherals Inc.** MPI is among the slimline contenders and will be using Compec for the first European showing of a half-height 5¼-inch drive. The drive comes in 48 or 96 tpi single or double sided models and gives a range in capacity of 125 Kbytes to one Mbyte.

It is accompanied by a two-inch high eight-inch drive, announced earlier this year, which ranges from 400 Kbytes to 1.6 Mbytes in capacity and has a 3ms track to track access time.

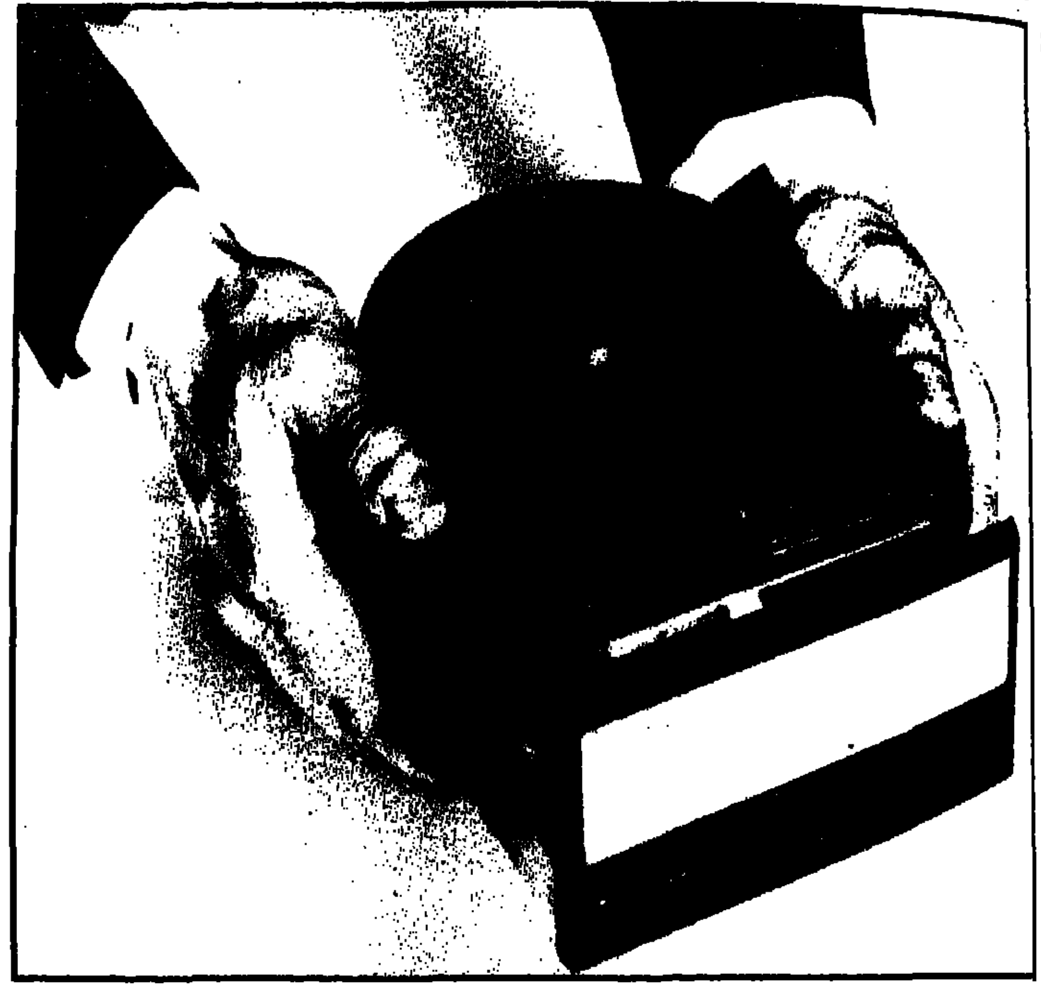
Tandon, too, produces half-height models as part of its range, and supplies 5¼-inch and eight-inch drives with capacities ranging up to one Mbyte and 1.6 Mbytes respectively. Tandon's announcements this year, however, are in the 5¼-inch Winchester market. The drives come in single, double and triple platter versions and have maximum capacities of 6.4 Mbytes, 12.8 Mbytes and 19.1 Mbytes.

BASF, in addition to a new IBM 3370 compatible disc drive, for larger systems, will be exhibiting products in the floppy drive market. These include the new BASF 96 tpi FlexyDisk, a 5¼-inch quadruple density floppy which will be making its UK debut. BASF has a substantial slice of the European floppy market. 1980 unit shipment figures indicate a percentage share of about 13%.

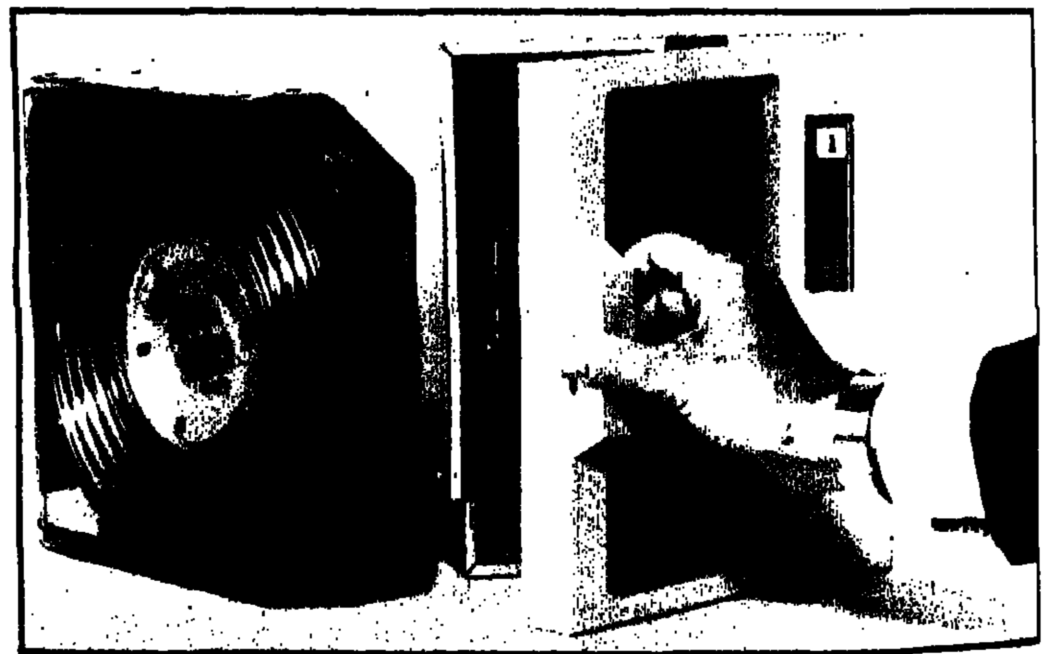
This percentage is one which is matched by that of the US manufacturer **Micropolis**. The new product here is the Model 1115 minifloppy, a 96 tpi drive with a capacity of up to 1Mbyte and a 6ms track to track access time. Micropolis, will also be unveiling 5¼-inch and eight-inch Winchester drives.

Symbiotic Computer Systems will be exhibiting its Winchester 5¼in hard disc, Symbfile. Capacity ranges from three to 42 Mbytes. Symbfile is compatible with the IBM PC, Sirius, Apple II and Apple III microcomputers.

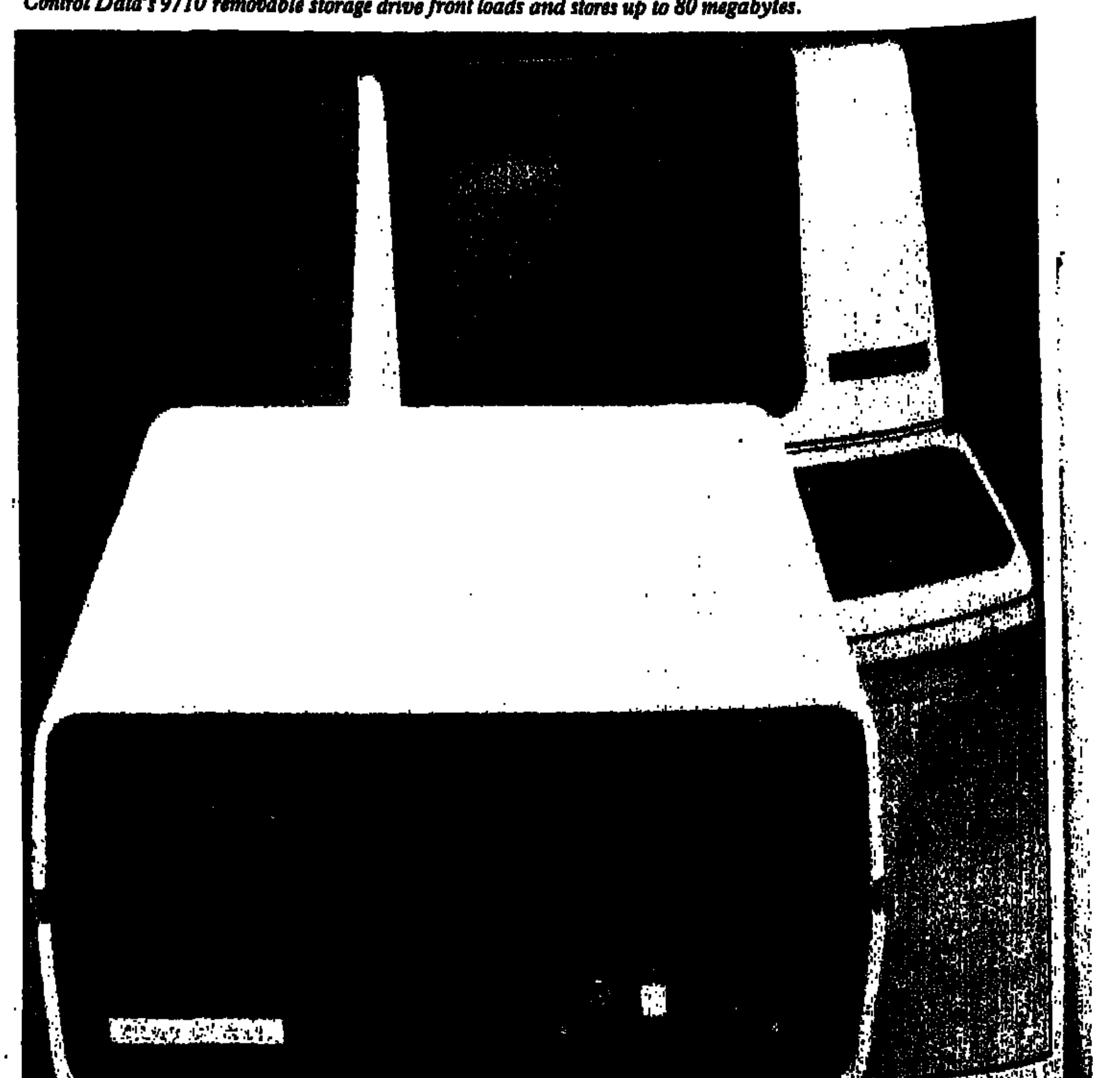
Symbiotic is also launching its networking system, Symbnet.



Control Data's 5¼ inch Winchester – the Wren – is one of many mini-Winchesters at Compec.



Control Data's 9710 removable storage drive front loads and stores up to 80 megabytes.



Arrow's A1 micro system, with integral Winchester and floppy, is based on the DEC LSI-11.

COMPEC'82 Exhibition Preview

This scene has changed radically in five years, says Boris Sedacca

From old 'glass teletype' to intelligent terminal—and now it's nearly a microcomputer!

This bar code reader is completely portable.

IF one were to try to define what a terminal is one would have to cover the whole gamut: from hand-held portable data capture terminals to a remote IBM 4300 series mainframe connected in a complex network to a host 308X mainframe under IBM's Extended Architecture environment.

Some five years ago, people were still talking of the ubiquitous Teletype. Today Teletypes no longer rule the roost, having given way to video-style visual display units (VDUs), or if you prefer American terminology, cathode ray tubes (CRTs).

Early VDUs were basically teletype replacements and were referred to as "glass teletypes" suitable only in cases where no hard copy output to paper was needed.

They also became referred to as "dumb terminals" because data was sent out character-by-character to the host computer which had to cope with the task of whipping around all the terminals connected to it to see if a character was on its way – not a very efficient use of expensive processor time, of course.

So along came "intelligent terminals", a term sometimes confused with the term "microprocessor-controlled", because a microprocessor does not in itself make a terminal intelligent. It may be used simply to take over functions previously carried out by means of electromechanical components.

In other words, the use of microprocessor control is primarily economic but may also provide extra features.

Extra intelligence is usually added in for facilities like data communications, and few terminal manufacturers now offer dumb terminals only. Some hang their hats on the protocol emulations market, that is, for mainframe data communications environments. Some add diskette drives and an operating system like CP/M to provide a full-blown microcomputer.

Tektronix has cornered the graphics market, and terminal manufacturers invariably offer Tektronix compatibility if they wish to provide graphics facilities.

Hard copy facilities are catered for by building in an interface port to which a receive-only (RO) printer may be connected. Although the teletype has practically retired, the market for keyboard send/receive (SR) hardcopy terminals still exists.

Some users find they can do without the video facilities of a CRT-based terminal. Others want an additional keyboard to the one already attached to their terminals just for convenience.

Terminal exhibitors at Compec are a mixed bunch. Some manufacturers represent themselves directly with a limited product line, while distributors can usually show a more varied, though not always coherent range.

For example, **Riva Terminals** represents many of the leading names from the terminal manufacturers, and will be showing the latest letter quality printers from Diablo and Tokyo Electric Company (TEC), together with a high-speed printing terminal, the GE Terminet 510 operating at 500 chps, as well as the new Mullard GP300 multi-purpose printer.

Other printer manufacturers to be represented on the Riva stand include Anadex, Control Data, Epson, General Electric, Lear Siegler, Okidata and Seikosha.

Also on show will be 30-chps and 120-chps keyboard printers from GE and Teletype, together with a range of dumb to semi-intelligent VDUs from Lear Siegler and ADDS.

Low cost terminal emulations for Burroughs, Honeywell and NCR mainframes is another feature of the Riva stand, as well as voice data entry and touch-screen interactive terminals.

In the line of graphics terminals, Riva will demonstrate the PC 1024 Graphics Workstation, which uses the IBM Personal Computer as a controller to provide Tektronix 4014-compatible graphics which will operate with most industry standard graphics packages.

Also shown will be a new generation of graphics boards to allow Televideo, ADDS, Datamedia, DEC and Lear Siegler displays to emulate Tektronix 4014 terminals. The Datamedia colour display emulates the Tektronix 4027.

Graftalk, running under CP/M on a local micro, allows Riva graphics terminals to process, display and plot a range of business graphics. Also, a composite video interface on Riva's PrintGraphics system produces plain paper copy from almost any display monitor or camera capable of generating a standard TV signal.

Daisy Terminals will be showing its latest microprocessor-based printer terminals including a KSR model called 89Q, using the Qume Sprint Series daisywheel mechanism with control systems designed by Daisy Terminals for a variety of operating modes including graphics and word processing facilities like bold print, shadow print and automatic proportional spacing.

The 89Q has 76 keys with 15 additional functions as well as an alternative keyboard for APL. It is designed to fill a gap in the otherwise comprehensive Qume range of printers and terminals. While some exhibitors for terminal equipment have their roots in the data processing market, others hail from the telecommunications market.

The stand for **Trend Communications**, the data communications division of Phicom, will feature the new Trend 880 KSR and RO printers which offer bi-directional expanded and compressed print, baud rates up to 9600 with 4K data buffer, four character sets and two block-graphic character sets as standard.

The arrival of Teletex, or "super-telex" is still some way off, so in the meantime intelligent telex machines will have to do. Also on display is the Trend telex terminal supplied to British Telecom and marketed as the Puma 73A, which offers electronic message storage and automatic international and national dialling with autocheck answerback and autodial delay.

Other features include full electronic typewriter-style tabbing facility, directory store, 8K or 16K non-volatile store and facilities for adding paper tape.

The Trend 800 printer range in RO, KSR and ASR versions, the new Data Tester 100 and the range of Trend data and telegraph test equipment will also be on show.

Compec 82 will see terminal manufacturer **Zentec's** entry into the microcomputer systems market with its new Series 2000 family of Unix-optimised multi-user machines based on an 8MHz 16-bit 8086 microprocessor. Up to six intelligent video workstations are supported and programs can be downloaded to them.

A range of peripherals is offered including diskette and Winchester disc drives, and high performance printers. The Zentec 8000 Series of programmable intelligent terminals is also on display, offering customised configurations for OEMs who require special logic, 12in or 15in video screens, custom keyboards and even special packaging.

Zentec's new Cobra video terminal will be on show for the first time in Europe, featuring 12in or 15in tilt-and-swivel display screen, detachable keyboard, 12K EPROM, 16K RAM, two serial RS232 interface ports, and a two-page memory.

Volker Craig will show the Chat VC4404, a high quality conversational terminal with 10 function keys, cursor addressing and standard printer port. An add-on option for Tektronix 4010-compatible graphics is available.

Also shown will be the new VC3100 with full editing facilities, smooth scroll, highlighting, 16 user programmable string keys, optional extra page of memory, printer port and Tektronix 4010 graphics, as well as VT52 emulation on the VC4152, and the 415 APL terminal.

British data communications specialist **Videcom** will exhibit a 15in Apollo display terminal capable of handling up to 50 different protocols including those of all the major mainframe manufacturers such as IBM, ICL, Univac, and Burroughs, as well as X25.

The synchronous version costs £975 while the asynchronous version costs £795. Also shown will be the Apollo desktop microcomputer with dual diskette drives.

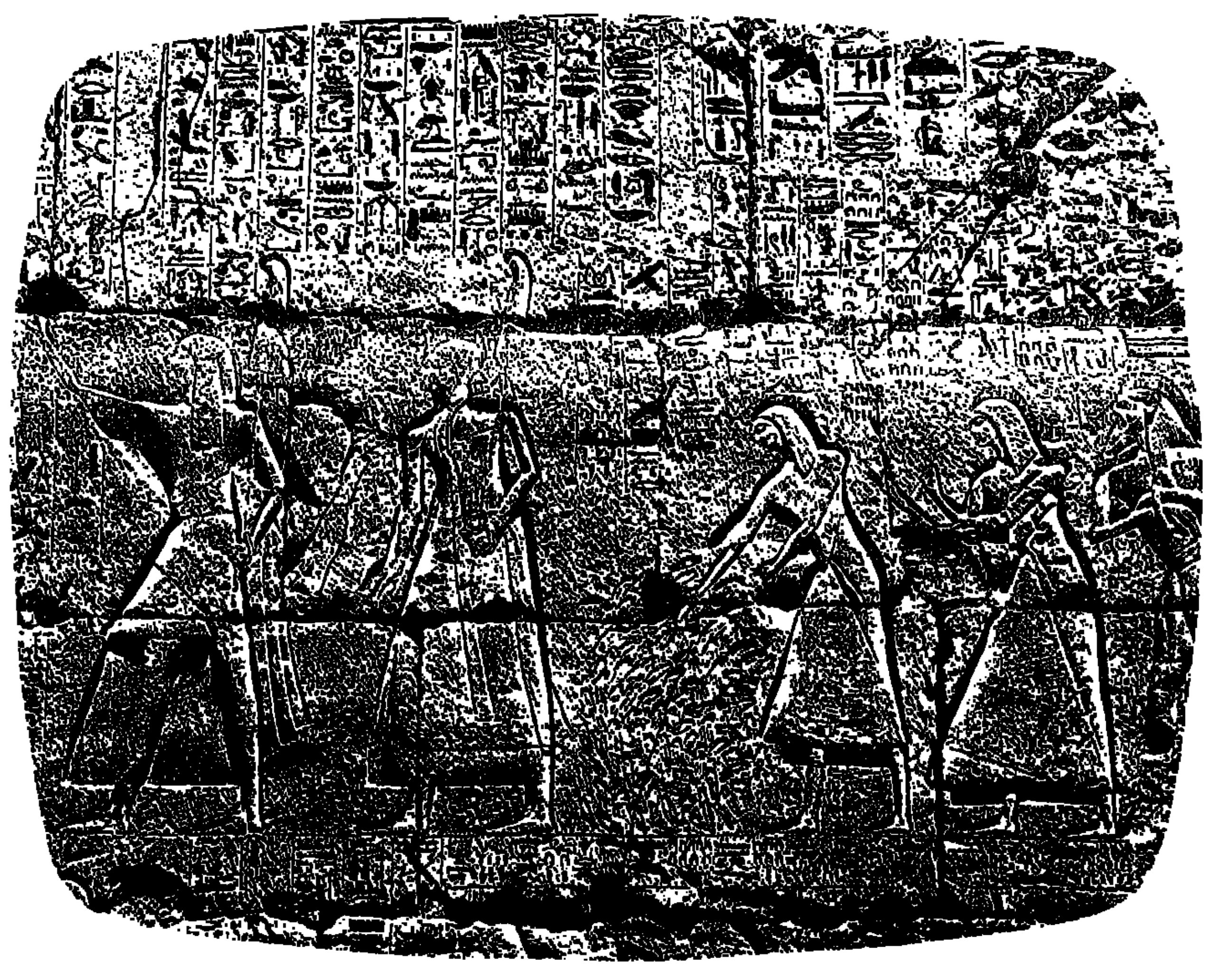
Thorn EMI Brimar will show its range of CRTs and hybrid circuit modules for manufacturers of video monitors and terminals. Tubes on show will feature high resolution for high density display. Contrast enhancement techniques include anti-reflection treatment and coloured filters.

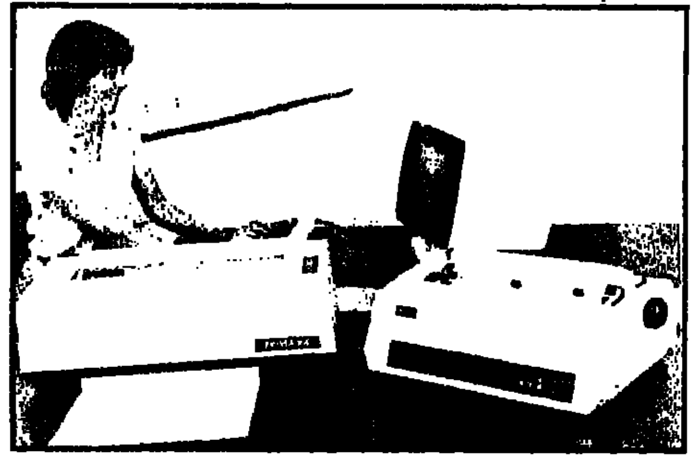
Low-profile screens with screen aspect ratios of 2:1 are available for application where the full area of a conventional screen is not required.

Hybrid circuit module kits provide equipment designers with the analogue circuitry required to drive CRT displays, leaving them free to concentrate on overall design.

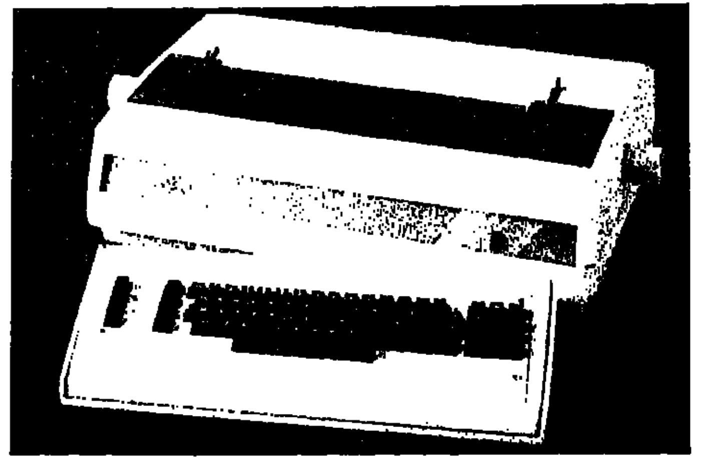
Rapid Terminals, a division of Rapid Recall, will be demonstrating some video, graphics and printer terminals including the Callan CD100L integrated microprocessor workstation based on the LSI-11 Q-Bus backplane, supported by DEC and comprising a VDU, detachable keyboard and space for two diskette or Winchester disc drives, as well as daisywheel printer terminals from Diablo and the VT100 family of VDUs from DEC with graphics capacity.

■ Turn to page 52





CPU Peripherals offers this Daisywriter 2000 daisywheel (right) and Prima matrix printer.



Daisy Terminals has extended its range of terminals by the addition of the 89Q KSR (keyboard send/receive) model.

The Cleardata range of smart data entry terminals from KGM Electronics.

■From page 51

Phoenix Technology, UK representative for several European terminal manufacturers, will be showing colour graphics terminals with a choice of eight fixed or selectable colours, a choice of four emulations on one terminal including VT100 and Tektronix 4010 compatability.

Also on show from Phoenix will be Video Text terminals with 14in colour or 10in monochrome display, low profile keyboard, printer output (tape recorder output optional) and composition coding.

The company also supplies monochrome monitors for closed circuit television and data display ranging in size from six to 24 inches in various phosphors and cabinet styles. Direct etch CRT finish is also available, as are colour graphics monitors.

The **Philips** stand will feature a variety of European manufactured terminals, including Italian-made open frame monitor monochrome displays ranging in size from six to 15 inches.

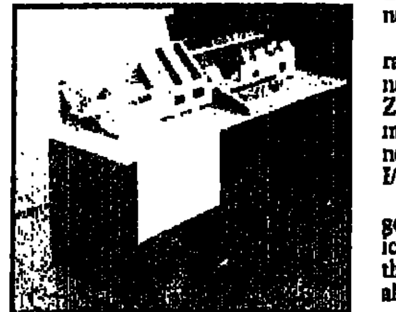
A cased monitor, the PCT1201, will be demonstrated, as will colour monitors with 14in displays. Philips 12in and 15in VDUs will also be on show, and a Philips PCT1201 will be one of the prizes in a draw from business cards left on the stand.

Pericom Data Systems, a Milton Keynes based terminal manufacturer, will exhibit a new VDU, the Pericom 7800, offering customised firmware and "soft" keyboards and a range of field-installable options. These include access to Prestel or microcomputing facilities in the form of the Pericom Microsystem 7, with a range of storage facilities from up to four minifloppy or eight-inch floppy diskette drives to two 12.5-Mbyte mini-Winchesters.

Northamber will show a wide range of equipment from Epson, Oki, Mannesmann, Tally, Anadex, NEC, Toshiba, Star, Qume, Diablo, TEC, Televideo, Hazeltine, Lear Siegler, Rutishauser. A new addition to its range will be the Nippon-Univac micro.

Newbury Data Recording, a company formed by the merger of AATA Recording Equipment and Newbury Laboratories in May this year, will be launching two new VDUs, the 8110 and 8112, incorporating custom-designed ULAs, as well as IBM 3270 and Honeywell 7800 compatible VDUs, and an ICL CO3 protocol controller.

Microvitec, a UK manufacturer of colour display monitors which has recently been included in a Department of Industry scheme to put colour microcomputers into primary schools, will demonstrate monitors to operate with a range of popular microcomputers including the BBC micro, the Research Machines RML 480Z, the Sinclair Spectrum and the Apple II.



Input 3000 OCR reader/sorter.

In addition, a variety of open-frame versions will be shown offering standard, medium and high resolution graphics capability.

Micro Peripherals will show the full range of BMC monitors. The new General KDE820 12in VDU will be shown for the first time in the UK, featuring 80 character by 24 line display, half or full duplex transmission capability and serial RS232/20mA and printer interface.

Mellordata, exclusive UK distributor for Datamedia colour and monochrome ergonomic display terminals featuring emulation for IBM 3270, DEC VT100, Data General, ADDS, Hazeltine and Lear Siegler, will show the Colorscan range with optional high resolution graphics.

Also exhibiting on the stand will be Pulse Train Technology, a DEC systems house which specialises in market research applications and specialised marketing software, and Touch Technology, a company jointly-owned by Pulse Train Technology and Mellordata.

Support for touch-based applications is provided by Pulse Train Technology, and terminal sales and maintenance is provided by Mellordata.

Touch Technology will demonstrate the touch-based "firming squad" shown on the Tomorrow's World television programme.

Printer manufacturer **Mannesmann Tally** will show off its CIT101 VDU offering compatibility with the DEC VT100 with standard features such as blinking, reversed blinking, underline, reversed underline and dual intensity characters.

A graphics terminal, the CIT414, is a fully integrated Tektronix 4010/4014-compatible device with detachable keyboard supporting a native graphics mode and an Ansi-compatible alpha mode.

The CIT 161 eight-colour DEC VT100-compatible alphanumeric terminal offers the same facilities as the CIT 101 but with added functions and video features. A programmable graphic card, the CIG 201, is available as a plug-in option for the CIT 101 to provide Tektronix 4010/4014 systems.

Lynwood Scientific Developments, a terminal manufacturer for commercial, professional and military applications, will show a range of equipment from the high-volume Beta emulation terminal to the Alpha Graphics editing terminal.

The Alpha Colour terminal and the Alpha System may be used as a development system or a small business computer.

Insight Terminals will exhibit two new product ranges. The first is the cdt-1 range of 14in colour terminals with background and foreground colour control. An optional 512 × 512 graphics facility is available offering software compatibility with Tektronix 4027 terminals.

The second product is the pdt-1 range of network processing terminals using 12in or 15in display, Z80 microprocessor with 64K memory, serial ports for synchronous communications and parallel I/O ports.

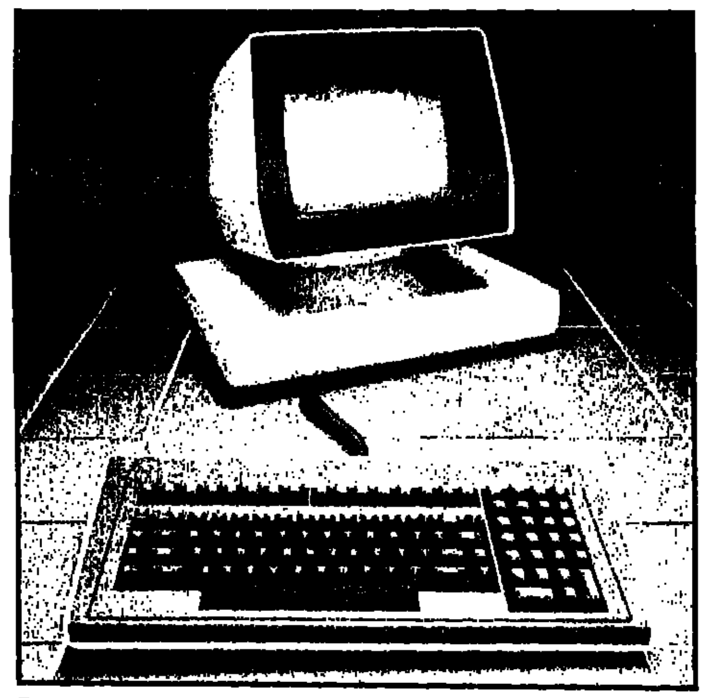
The company will also show the gdt-1 range of monochrome graphics terminals announced earlier this year, and the vdt-1 range of alphanumeric terminals.

Hytec will launch its new C Series microcomputers which will join its existing range of ICL-compatible terminals. The C Series combine microcomputer facilities with those of interactive terminals by running two programs concurrently. This allows a lengthy function such as a print run to be performed while the machine is communicating in emulation mode with a mainframe.

ICL CO1, CO2 and CO3 communications protocols are supported, as are Honeywell and Burroughs protocols. The C Series also runs under the CP/M operating system.

Other Hytec products on display will include the H Series terminals running in interactive and standalone modes, the H5000 hard disc subsystem with one to 80 Mbytes of storage, and terminals with integrated hard disc of five to 20 Mbytes capacities.

CPM-based applications include word processing and financial modelling with systems software comprising database, query languages, language compilers, communications software, and transaction processing software.



Zentec's 8000 intelligent terminal can be configured to requirements, even to special packaging and screen size (12in or 15in).

Gresham Lion, a Feltham based terminal manufacturer, will be showing its Lyme 5000 and 5500 monochrome terminals and Lyme 6000 colour terminal. The 5500 and 6000 offer as standard facilities an eight-page screen memory, choice of 80- or 132-column display, smooth scroll operation, detached keyboard and editing facilities.

Software options include alternate character sets, and graphics packages added by plugging in an additional circuit card, providing two pages of 512 × 256 pixels in monochrome, or two pages of 256 × 256 pixels in eight colour or eight greyscale level display.

The software will support a number of functions including point generation at any screen position, drawing of horizontal or vertical lines, circle and octant drawing around cursor position or any designated point plus block infill. Incremental moves can be made in any direction for fast contour plotting.

Geveke Electronics will exhibit its recently-released range of Visa terminals, the Models 30 and 40, which offer plug-in emulations of the major terminal manufacturers.

Farnell, the UK agent for Tandberg Data of Norway, will show the TDV2200 series of terminals which comprises six emulation models. There are also two OEM terminals — a teletype replacement, a page-buffered editing terminal and a new APL version. Model TDV2300 is a CP/M based microcomputer.

Data Type will demonstrate an 8-bit microcomputer from Televideo, for which it has recently been appointed distributor, based on a Z80 with 64K of memory running under CP/M, and expandable to a 16-user system.

The company will also show its high resolution AutoGraph XK1 graphics terminal and the AutoGraph X5A colour graphics terminal, as well as the new Televideo 970 which uses a "cooling tower" to prevent heat build-up.

Also shown will be established products such as the AutoGraph 100 graphics terminal, printers from Florida Data and Infoscribe, and an LSI-11 based micro called Atlas.

Brent Cybernex will show its range of terminals including the XL Series of asynchronous terminals plus emulation for CDC, Data General, DEC and Hazeltine, the MDL Series with up to six pages, split screen with up to 32 splits, multi-highlighting and double width characters.

Also featured will be the SA Series offering Burroughs TD-830 emulation, synchronous and asynchronous replacement for Honeywell VIP-7800 series, Touch screen for the MDL on up to 256 touch-selectable areas, APL and Graphics offering Tektronix 4010 and 4012 and Plot 10 compatibility.

CPU Peripherals will demonstrate the Hazeltine range of terminals, including the first public showing of the Esprit III which is compatible with Televideo TVI 950 equipment (at around 80% of the price, according to the company), and The Esprit II and Executive 10 terminals.

Penny and Giles will show a range of terminal emulations for Honeywell, Burroughs, DEC, Tandem and NCR users.

British micro and terminal manufacturer **Cifer Systems** will launch the 2841 graphics terminal priced at under £1,000. The system emulates the Tektronix 4010 and has a screen resolution of 1,024 × 256 points. Special features include two different user-selectable display modes — standard 80 × 24 or for word processing applications, 128 × 32.

Also demonstrated will be Cifer's 2684 intelligent terminal from the Series 2 range, offering up to 256 Kbytes of memory, graphics and CP/M or MP/M operating systems.

Telxon, a supplier of portable data recording terminals, will show the 716 which accepts input from bar code wand or keyboard with a memory capacity of up to 32,000 numbers. Model 787 is user-programmable and allows customised keyboards to be selected with alternative input from light pen or laser wand providing storage for 128,000 characters and program storage in 8 Kbytes of ROM.

The Telxon 700 is a compact programmable terminal with application programs which reside in a plug-in cartridge and memory capacity of up to 16,000 numbers. Model 790 incorporates all the features from the 787 but has a liquid crystal display, real time clock and more memory.

Tann-Synchronome will show a UK manufactured, microprocessor based, card access control system which can be extended to encompass business management functions such as time and attendance recording.

Feedback Data will show its single transaction type 496 Industrial Attendance terminal with slot reader for bar-coded identity cards and 16-character alphanumeric display.

Also on show is the 490 general purpose terminal with multiple transaction capability, wand option for reading bar codes, 32 character display and alphanumeric keyboard. The terminals are operated by a 16-way line sharing adaptor Type 492.

Pepperl and Fuchs, UK agent for Italian photo-electronic equipment manufacturer Data Logic, will display bar code readers and scanners. The P30 hand-held wand reader has analogue and digital outputs, using infra-red or red LED as light source coupled to high or low resolution receiver optics. These wands are complemented by a range of slot and fixed beam readers.

The display of laser beam scanners includes the LS100 and the LS400 used in materials handling environments.

MSI Data International has nearly 250,000 hand-held microcomputers installed worldwide, ranging from what the company claims to be the smallest hand-held computer terminal on the market, the MSI 55 weighing less than six ounces, to the MSI 88s with a memory capacity of 112,000 characters for applications programs and data storage.

Microfin Systems is demonstrating a range of applications programs on portable data capture equipment written using a recently announced program development system called Microfin Development System (MDS). The Microfin portable terminal can now receive applications programs downloaded from a telephone line.

Also on display will be the Microfin Retailer point of sale terminal, a mains powered unit with 40-column receipt register, cash drawer and detachable Microfin terminal, and with optional OCR and bar code readers.

Intermec UK will be showing a range of bar coding equipment, printers, readers and scanning wands. Two printers will be shown, the Model 8610 for point-of-sale labelling and the S35 Code 39 bar code printer.

A new reader on display is the 9410, an operator programmable version of the 9400 portable reader with increased memory capacity to 60K. Another new product being exhibited is the Model 9610 point concentrator supporting up to [illegible] printers, readers and associated terminals with IBM 3741 protocol emulation.

Ambitron will show an electronic funds transfer terminal for garage forecourts allowing [illegible] hour unattended petrol sales by credit card, and computer graphics equipment from Jupiter Systems and ID Systems.

Lundy-Farrington will show its 7200 document reader/sorter and CheckMate remittance workstation featuring optical character and magnetic character recognition, the Teltron T1000 teller terminal offerng push-button balancing, automatic batching and status.

Input Business Machines will demonstrate three multifont multiline OCR reading systems. System 3000 reads OCR B alphanumeric, E13B and handprint termixed in up to four code lines.

System 5000 is a sales slip reading system for the retail trade with product and price data in OCR A or B alphanumerics. System 20 is a remote terminal OCR read station able to capture data from a single code line on a hand-fed document.

DRS Data and Research Services specialises in data capture without keyboards, using optical mark reading (OMR) techniques on DEC hardware. DRS is the UK distributor for the Kaiser range of OMR peripherals in the UK and Eire.

Equipment on show will include the OMR 40 and OMR 30 automatic optical scanners, the hand-fed OMR 21 unit and the small OMR 10 optical scanner for [illegible] sized forms.

Astron Warwick Electronics will feature its System 52 data capture and time recording system which can be used with most of the popular makes of micros including Pet and Apple, as well as minis and mainframes. A new bar code reader terminal will be shown [illegible] a standard time recording terminal and badge reader.

Earth Data, a specialist in the field of data acquisition systems for geophysical exploration, scientific research and civil engineering will display its 9690 digital modulator, a telemetry link and a line interface.

The modulator, normally located at an outstation, multiplexes and encodes analogue input signals into a PCM bit stream transmitted over the telemetry link or landline to the base station. The received data is decoded into the original analogue signals.

Decision Data's 3351 workstation.

Maggie McLening explains why the graphics boom has caused a scramble among hardware manufacturers

Where to find local colour

The Bitgraph high-resolution graphics terminal from Dicoll.

AS the graphics boom hits the UK, hardware manufacturers are scrambling over each other to widen the range of output devices, improve the quality of the finished product and to cram more intelligence into the output device in order to lighten the load on the host CPU.

Graphics software is notoriously greedy for memory but the current trend towards workstations and intelligent terminals, plus more sophisticated device drivers in the output hardware, means that the burden can be shared.

Software that previously relied on mainframe capacity, and was therefore only available to all but the largest installations as a bureau service, has been able to move downmarket and in-house in many cases.

The cost has decreased in line with this, which probably owes a great deal to the personal computer, the majority of which have colour graphics facilities as standard. If it is possible to buy a micro with a colour screen for £200, albeit fairly unsophisticated, manufacturers all the way up the scale must justify their higher prices.

Another factor which has enabled the graphics industry to expand are standards for device interfacing. Three hardware companies led the way: DEC, Intel and Tektronix, in recognising the *North* American Presentation Level Protocol Syntax (NAPLPS) standards set up by the Canadian Department of Communications and the Virtual Device Interface (VDI) Standards.

Many others have followed suit, including Digital Research, ICL, Microsoft, Westinghouse, Xerox and ISSCO.

This has helped to lower prices by sharpening competition at the peripheral end of the market, and making the relatively small supply of graphics software go further by increasing its portability. The market for emulation devices, both hardware and software based, is growing rapidly and many companies are building equipment with this option included as standard.

Business graphics is undoubtedly the area of fastest growth at the moment, particularly now that hardware developments enable users to produce presentation quality slides and camera-ready illustrations straight from a high-resolution terminal display.

Proof of the market waiting can be seen in the statistic that over $1 billion a year is spend on production of slides alone in the United States. No figures are available for the UK, but the fact that there are a great many companies dependent on the visual aid area for a living indicates a substantial expenditure here.

The value of illustrating statistics to give greater impact has long been realised, but only recently carried to its logical conclusion, in the marriage of graphics to database inquiry facilities.

Use of micros linked up to a mainframe database as a personal aid to decision making for managers has become widespread but in the past, producing the histograms or pie charts has been a two-tier process. The data had to be extracted from the database, then re-input to custom-built graphics software such as SAS-Graph from the SAS Institute or Disspla from ISSCO.

Now there is another option available: a database inquiry language with colour graphics included as one operation. IDMS database specialist Cullinane was among the first to offer the facility by joining forces with Computer Pictures to give its IDMS Online Query Language (OLQ) colour illustration.

More recently, US packaged software giant Management Science America (MSA) and its micro subsidiary Peachtree announced similar products for inquiry on MSA's accounting and human resources database.

CAD/CAM systems, which were the first computer graphics applications to catch on, are now essential parts of many industries, notably those in the motor, aircraft building, shipping and oil areas. Their popularity is spreading downmarket, and the point at which CAD becomes a draughting system is becoming more difficult to pinpoint.

Until a couple of years ago it would have been possible to buy a CAD/CAM system of any sort for less than about £100,000. The top-bracket systems are still about that price or more, but there are a host of others costing upwards of £10,000 which may fulfil the user's needs quite adequately.

The addition of hard disc facilities to micros has brought them into the potential CAD host market, and the ability to attach digitised tablets to merge hand drawing with standard Fortran draughting programs gives them a flexibility that is very attractive to small companies involved in design work.

This year it is systems on the lower end of the scale that dominate the CAD/CAM area of Compec. Emphasis is on workstations which will run their own software as well as communicating with a host mini or mainframe.

Those looking for a complete hardware and software package might visit the **Lundy-Farrington** stand, where the recently launched UltraGraf workstation will be on display. The workstation comes complete with three-dimensional graphics software, making it attractive as a high-performance OEM system or as a complete CAD workstation to be run in conjunction with a host system.

UltraGraf offers high interactivity with rotation, local scaling, clipping, perspective and panning options in three dimensions. It has a large, 19in x 15in, high-resolution screen with a 0.010 spot size and is vector refreshed. There is also a Siggraph core standard package.

Lundy-Farrington, the European subsidiary of Lundy Electronics and Systems Inc, in the US, will also be demonstrating its UltraGraphics software which allows user to develop their own custom-built graphics applications. The version to be shown at Compec, Level 3, is designed to link specialised CAD applications with Lundy graphics, by providing an interactive three-dimensional front-end to the system.

Another supplier of colour terminals for CAD/CAM, **Techex**, will have systems engineers on its stand to discuss the Techex applications engineering service with Compec visitors. On display will be a range of desktop systems, high-resolution graphics terminals and intelligent colour graphics/alphanumeric terminals, including the Orchatech CAD/CAM graphics micro.

Techex also supplies graphic generation PCBs for OEM users, ranging from single board to full interactive systems. A selection of these will be on the stand, together with an imaging system demonstrating real time frame grabbing and image enhancement.

Particularly suited to CAD/CAM applications is the newly announced Vistagraphic 4000 series of raster scan display systems, to be shown by **CalComp**, a well-established manufacturer in this field.

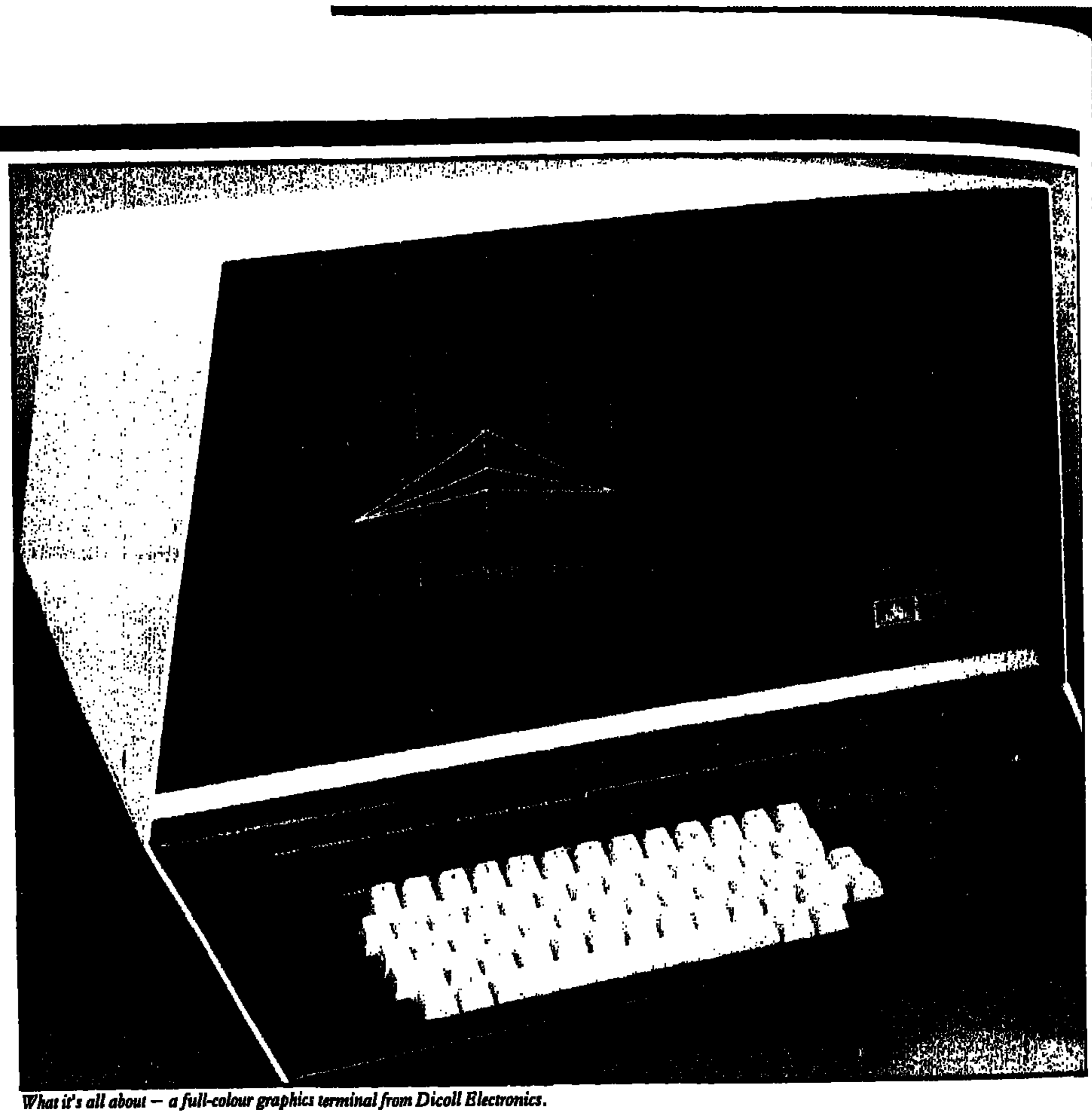
Like the UltraGraf machine, the 4000 series of dual MC68000-based colour or monochrome terminals can be used either as standalone workstations or as intelligent graphic displays.

In addition to Calcomp's existing range of pen and electrostatic plotters, and vector/raster controllers, Calcomp will also exhibit a new low-cost graphics tablet. The 2000 Data Pad is primarily designed for the OEM market, but for more sophisticated input techniques the 9000 Series intelligent digitisers are available.

■ Turn to page 54

GRAPHICS 2

■ From page 53



What it's all about – a full-colour graphics terminal from Dicoll Electronics.

One of the first lower-scale systems to run what had previously been mainframe graphics software is the Apollo Distributed Operating Multi-Access Interactive Network, Domain, from **Apollo Computer** in Berkhamsted, Herts.

Apollo Computer has already implemented the Gaelic package from Compeda and Thermal Analysis System, TAS, from Jones, Cassidy & Miller, and is in the process of installing the popular Disspla and Tell-a-Graf packages from US graphics software specialist ISSCO.

All these products had previously run only on mainframe machines, and have now been adapted for what is best described as a "supermicro".

"It is hard to categorise the Domain," said Jim Roberts, sales executive at Apollo Computer UK. "The machine is based on dual Motorola 68000 microprocessors, so I suppose you would call it a 32-bit micro.

"An unusual feature which helps to increase capacity is that the local area networking software is embedded in the operating system Aegis, a Unix look-alike that allows real time paging within the network."

In the CAD/CAM area, the Apollo Domain supports a variety of third-party software, including *Romulus three-dimensional* modelling from Shape Data, Pafec finite modelling and Dogs, also from Pafec. A selection of software, plus modelling and designing systems, will be on show at Compec.

Purpose-built plotting software for micros can be seen on the **Intelligence Limited (IRL)** stand. The Dublin-based company is demonstrating the Microplot package for generating pie-charts, histograms and bar charts, plus other products in the CAD/CAM area.

The **CADCentre**, based in Cambridge, is also to show an intelligent workstation, the Diad, which can be networked, and provides an expandable interactive draughting system. At the opposite end of the process, the CADCentre has designed and built the Gems image processor, which is already in use in a variety of applications including quality control, mechanical and electrical inspection, sorting, counting and microscopic checking.

Further digital image processors can be seen on **Micro Consultants'** stand in the form of the Intellect 100 and 200 family of generation and enhancement systems. These are suitable for applications involving radar, infra-red scanner, TV signals, sonograph and electron microscope.

Intellect 100 and 200 are both equipped with optional slow-scan input facilities and operate in real time to capture an image which can then be processed and output for display. Options for the 200 model include a two-dimensional correlator, fast fourier transform processor and array processor interface.

One piece of hardware that has undergone a quiet revolution in the graphics cause is the printer. Although daisywheel quality is still usually required for word processing the superior speed and versatility of dot matrix printers, particularly now that they can also handle colour, is putting them ahead in popularity.

The improved quality of dot matrix output often makes it very hard to differentiate between that and the daisywheel in any case, and the added ability to produce logos and letter headings makes many users opt for dot matrix.

Anyone looking for such a piece of equipment need look no further than Compec to be able to assess products from almost all the major manufacturers.

Riva Terminals of Woking in Surrey will have no fewer than eight on display from such manufacturers as Anadex, Control Data Corp, Epson, General Electric Corp, Lear Siegler, Mullard, Okidata and Seikosha.

Letter-quality printers from Diablo and TEC will also be on the stand, together with GEC's 500chps Terminet 510 and the Mullard GP3000 multi-purpose printer.

Anadex is also showing its terminals on its own stand, where the A series will be demonstrated. The DP-9500A and DP-9510A are both multi-task machines noted for high throughput and noise levels below 55 dBA.

As well as draft printing at 200 chps, with letter quality at 100 chps, the DP-9620A provides high-resolution dot addressable graphics at 72×72 dots per inch.

Model DP-9625A will be getting its first airing at Compec, and showing its 200 chps paces at 10cpi and double pass enhanced quality printing, both in alphanumerics and graphics.

Anadex claims that the DP-9625A combines the economy of the DP-9620A series with some of the high quality print characteristics of the WP-6000 word processor.

Japanese **Mitsui Computers** is to launch two dot matrix printers at Compec: the MC 2100 and MC 4100, which both have a 167 character set, including 24 print patterns, and 120 chps printing. They are guaranteed a strike life of over 100 million characters by Mitsui.

Another company showing a versatile new model is **C. Itoh and Co**, which will offer a 180 chps, 18-needle dot matrix printer capable of letter quality, two-colour printing. Itoh's 8600 printer can also cope with several alphabets (US, Ascii, English, German, Swedish and Greek) and eight character sizes, including two that are proportionally spaced.

Automatic vertical and horizontal tabbing is achieved through the use of stepper motors for positioning in both vertical and horizontal axes. RS232C and 20mA current loop serial, and 7-bit TTL compatible parallel interfaces are provided.

Also on Itoh's stand will be the model 8510 80-column dot matrix printer, a 120 chps machine with bit-image and logic-seeking capability, and the 1550, a 136-column version of the 8510.

Compec visitors looking specifically for DEC equipment will find a selection on **Computer Systems and Products'** stand, including the new Texprint colour and graphics option for the DEC LA 120 matrix printer.

One of the reasons why printers have had to update their image and standard of presentation, particularly with regard to colour, is the increasing quality of terminals. However good a particular diagram or illustration looks on the screen, in the majority of cases the user will need a hard copy to take away and printers still offer a cheaper alternative to a selection of more specialised other output devices.

Colour terminals from many well established manufacturers can be seen at Compec this year.

Ramtek will show its low-cost 6211 colour model with 640×512 resolution, and the 9000 series, configurable from a medium resolution 512×512 9050 system up to a multi-station 1,280×1,024 9460 system, each station having independent hardware facilities such as pan, zoom, declutter, entity detect and up to 32 planes of refresh memory, with DMA interfacing.

The recently released 9460 system, also to be shown on the stand, forms the graphics processor section of a CAD/CAM hardware package being jointly marketed by Ramtek and another major computer manufacturer.

Mini manufacturer **Hewlett-Packard** is also taking Compec as the chance to show its latest products, which include the HP75C portable micro and the PH86 personal, plus the HP2700 colour graphics terminal, which offers a choice of 4,096 colours and can offload graphics calculations from a host computer.

"I would describe the HP86 as being what the market perceives as a true personal computer: a low-cost machine with a big screen. In fact it has been described as 'affordable HP'," said Andy Palmer, marketing specialist for personal computational products at HP.

The HP86 costs £1,250, plus about £600 for a disc and £221 for a monitor, while the HP75C is priced at £690, including a single line display.

"If you're not careful with portable micros you lose their usability by having an over-limited keyboard," said Palmer. "With this one you can touch type, and it can be expanded to drive a plotter or an 80-column printer. Although there is only a single line display at the moment because we don't have a graphics ROM, we do expect to get one in the very near future."

Mullard will be giving prominence on its stand to its range of data graphic display tubes each with a range of deflection angles and faceplate sizes, plus its new multi-purpose GP300 letter-quality printer, and a selection of PCBs new to the UK market.

"Graffiti is our own package developed to run on micros," said Vic Way, managing director of Insight Terminals. "It is a set of Fortran subroutines which can be linked together to rotate lines, draw images and scale drawings. There is also the Quikdraw interactive program which uses the hardware cursor option on terminals to do things like drawing lines between points."

One of Insight's best-selling terminals was designed specifically to run the WordStar word processing package, and has a customised keyboard with 34 keys with WordStar operations engraved on them. Of the 1,000 or so terminals Insight sold last year, 600 were the WordStar model.

Having completed a record financial year, British micro manufacturer Cifer is showing its Series 1 micros with options for graphics display processor, and Series 2 terminals.

Terminals on the stand include new telex processing models and the 2841 graphics terminal which offers 1,024×256 point resolution, downline loadable function keys, character generation and Tektronix 4010 emulation.

Emulation facilities are becoming a big selling point for terminals and workstations, because attaching a personal micro to a big name manufacturer's mainframe or mini is often considerably cheaper than buying a terminal by the same company, and also offers access to CP/M-based software for running on the micro alone.

Normally, protocol emulation can be done by a software package, which is cheaper than a hardware device, and it is possible to buy packages to imitate protocols of many of the larger manufacturers, including ICL, IBM and DEC.

Dacoll of West Lothian has built protocol emulation into the hardware of its *M248* switchable protocol display unit, which will be demonstrated at Compec. Protocols can be altered by flicking a switch, and four models are currently available for Honeywell VIP 7006/VIP 7854, ICL 7181/XBM CO3, Univac Uniscope U 200/uts 400 and NCR 796-301/796-501.

Japanese manufacturers Hitachi and Nippon-Univac will be represented on the stands of Bytech and **Peripheral Hardware.** Bytech will be demonstrating the latest range of ultra-high resolution colour monitors, the Series HM3619A. These have a pixel resolution of 1,280×1,024, and a 19in black matrix screen.

The Series HM3619A will operate from any RGB video signal conforming to EIA RS-343A standards, with composite sync on green or a separate sync signal. Scanning frequency is 28-336 kHz horizontal and 40-70 kHz vertical, and both interlaced and non-interlaced displays can be accommodated.

Nippon-Univac's new 16-bit micro is to be shown for the first time in the UK on Peripheral Hardware's stand, together with the 8-bit TMK 64K micro launched in September.

The Lear Siegler range of termi-

■ Turn to page 55

A flatbed plotter – several outfits plot to sell some at Compec this year.

GRAPHICS 3

■ From page 54

nals, including the ADM24 screen launched this autumn, will also be demonstrated by Peripheral Hardware and the TAB 132/15-G interactive graphics terminal.

British manufacturers far outweigh the Japanese contingent at Compec this year on the terminal front, both on products and in the incentives offered to buyers.

Insight Terminals of Wootton in Bedfordshire is exhibiting two new ranges, the cdt-1 series of 14in terminals with full control of background and foreground colours, and the pdt-1 range of processing terminals to attach to networking systems.

The cdt-1 range has an optional 512×512 graphics facility which is software compatible with Tektronix 4027 equipment, and Insight also offers its own software products to help first-time users with development.

Also on the Dacoll stand is the redesigned M249A graphics terminal, shown for the first time at Compec. The M249A is capable of simultaneous displays of graphics and alphanumeric data through the introduction of separate control circuits, and offers full software compatibility with the Tektronix 4010 using raster scan technology.

The PC 1024 graphics workstation to be exhibited by **Riva Terminals** also offers users the option of working in Tektronix 4010 terminal mode. It is the first of a range of graphics systems that combine high resolution graphics with a general-purpose micro, and operates with most of the industry standard graphics packages.

Phoenix Technology, the UK representative of several European manufacturers, is to show high resolution colour terminals with a choice of eight colours, and four emulation modes for each terminal including DEC VT100 and Tektronix 4010 compatibility.

Phoenix also stocks videotex terminals with either 14in colour or 10in monochrome displays, low *profile keyboard*, printer output and composition coding.

Several other exhibitors will be demonstrating DEC VT100 emulatable machines. These companies include **Micrographics** and a recently formed company called Ambitron from Newbury, Berkshire, making its first appearance at Compec.

Micrographics, a subsidiary of Microvitec, is launching a range of colour terminals which supports a fully programmable alphanumeric and graphic character set, and can emulate DEC VT100, Lear Siegler ADM5 and TeleVideo 925.

Ambitron has the exclusive UK distributorship of the high resolution graphics range of terminals made by Jupiter, and these will be on display.

A range of DEC VT100 compatible terminals with full graphics facilities is also to be shown, and as a manufacturer, Ambitron offers users the option of adding graphics to existing VT100 terminals.

A specialist in the DEC marketplace, Computer Systems & Products of Nottingham, will be showing a CIT colour graphics terminal linked up to a PDP-11/23 mini, and will also have a link set up to its home installation. In addition to supplying DEC systems and software, the company provides bureau and engineering services.

Two companies in the micro sector of the market will be showing newly-launched products. C. Itoh and Co has just released a general-purpose 16-bit machine, the YD-81100, running under the MP/M operating system with colour graphics facilities, and Data Type is showing the TeleVideo 970, which has cooling tower architecture to prevent heat build-up. Additionally, Data Type will be demonstrating its own high resolution Autograph XK1 and XK5A terminals.

Illustrating the trend towards putting intelligence into the output device to save host CPU processing, Modata of Tunbridge Wells, which is a CCTA supplier, is showing a screen with 64K of memory.

"The terminal was manufactured in conjunction with another peripheral supplier," said Malcolm Walters, sales manager of Modata. "We mainly sell the equipment for linking into the Hi-Net network, and also offer the Lyme 2000 terminal manufactured by Gresham Lion."

The AED 767 full colour raster graphics terminal to be shown on **Dicoll Electronics'** stand has up to 42 Kbytes of RAM/ROM, and comes with an in-built anti-aliasing ability, believed to be the first of its kind. Anti-aliasing is accomplished within the terminal's firmware at drawing time, enabling the user to create a variety of anti-aliased drawings without prior processing by the host computer.

Dicoll has just reduced the price of its terminals as an additional incentive to buyers, and the AED *767 now costs £14,500, while the* AED 512, also with up to 42 Kbytes of memory, now costs £10,480.

Also on the Dicoll stand will be the BitGraph text and graphics terminal, which combines raster-scan technology with the performance of the Motorola MC 68000 processor.

BitGraph's high resolution 1,024×768 pixel display is especially suitable for applications where multiple variable-size character founts and graphical data need to be interspersed on the screen.

Although **Sintrom Electronics** is featuring the newly-launched Beacon colour graphics workstation, it is also completing the peri*pherals picture* with a selection of hard-copy devices.

New to the market is the Polaroid Videoprinter photographic hard-copy system that gives a choice of output, including Polaroid SX-70 4×5 inch or 8×10 inch instant prints, 35mm or 4×5 inch film, and Polaroid 8×10 inch transparencies.

The trusty pen plotter has not been forgotten, and also appears on Sintrom's stand in the form of the single or multipen Houston Hiplot, including the new DEC Regis compatible model.

Nicolet Instruments of Warwick, a subsidary of the Nicolet Instrument Corporation, is showing Nicolet Zeta's recently released table-top Zeta 8 eight-pen plotter. This gives high throughput by using eight capped pens on one microprocessor-controlled carriage, attaining a speed of 50cm per second, with 2G acceleration and a resolution of 0.025mm.

The Nicolet Zeta 3610 four pen 90cm plotter will also be on display for the first time.

Several companies are showing electrostatic plotters and intelligent drum plotters.

Southampton-based **Quest CIL** is showing its Series 5000 Digital Intelligence Drum Plotter, which is a draughting machine to cover a range of graphics requirements, and has host computer driven software to interface with most computer systems.

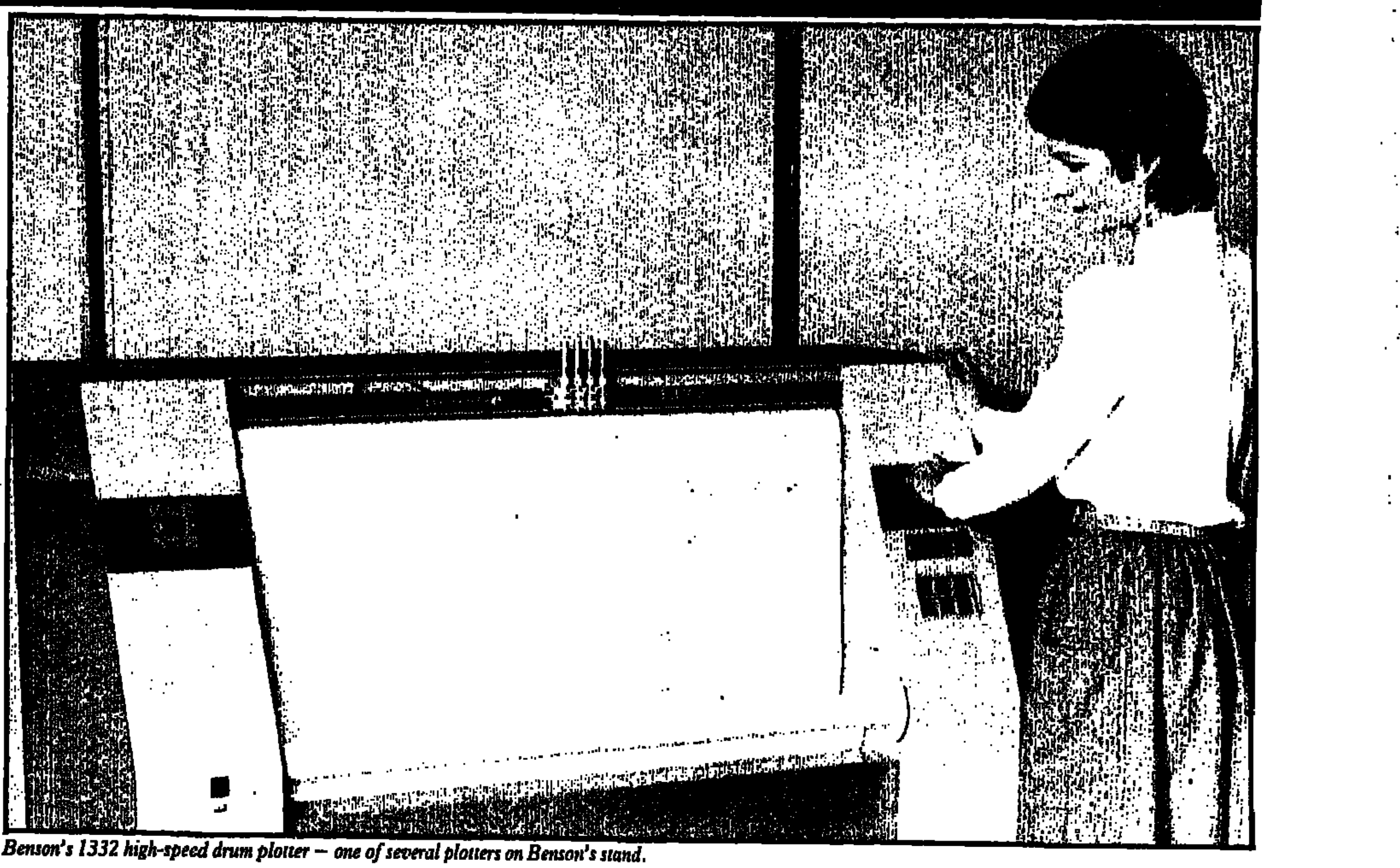
Benson UK of Bristol is demonstrating an AO drum plotter accepting roll paper and plotting up to 25 cms per second, and its new model 1565 four-pen plotter with a top speed of 113cm per second.

A specialist in automatic draughting techniques, Benson will also have an electrostatic printer/plotter with a quadrascan writing head on the stand illustrating various design applications.

The Quadrascan range gives high plot resolution and uses a drying method developed by Benson to ensure uniform density of output regardless of plotting speed, which also allows the paper to dry out before leaving the machine.

The introduction of polyester film plotting was a significant development in the electrostatic market, because it offered a more stable and accurate medium, unaffected by climate. **Versatec Electronics**, a subsidiary of the Xerox Corporation, is showing such a plotter, the Versatec 8236F 36in wide film plotter. This adds the capability for drawings to be overlaid, which is particularly useful in many mapping, geophysical and business graphics applications.

Versatec's model 430 offers user of CalComp 921/925 pen plotting tapes high-speed electrostatic plotting without modification to their existing computer output.

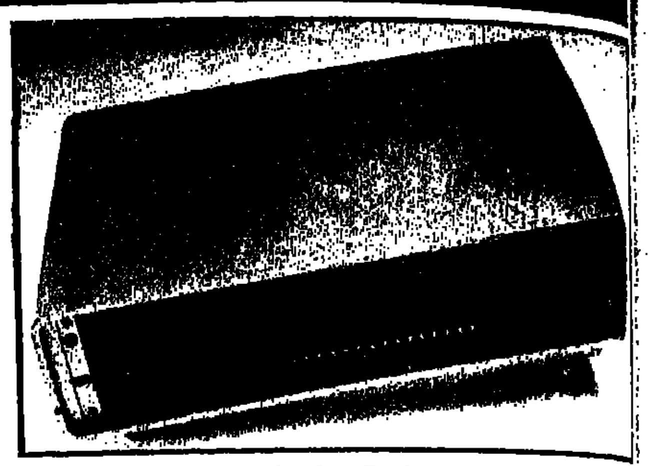


Benson's 1332 high-speed drum plotter – one of several plotters on Benson's stand.

MISCELLANEOUS 1

John Riley reports on some offshoots of the industry

Hard-to-define group points up extensive spread of services



The Orbitor microprocessor box from Peerless Foam Moulding.

THE vitality of the computer industry as a whole is reflected in the wide range and variety of exhibits at Compec which do not readily fit into any clear category.

Many of these are peripheral products and services which have been generated in response to the evolving demands of the industry, and which often link several areas of the DP market. The demands have included better interfacing facilities and compatibility between systems, improvements in accuracy and efficiency, effective backup facilities, and fail-safe capabilities.

Good examples of these are provided at Compec where new developments are being launched in areas such as keyboard design, computer furniture and air and power conditioning, as well as voice recognition and logic development.

As the industry has proliferated, a comprehensive spread of services has clustered around it, ranging from aspects such as maintenance and security through to training, information and consultancy.

All of these are represented at Compec, and grouping them into a miscellaneous category does not consign them to the bottom of the barrel. On the contrary, it serves to highlight them and bring their contribution into focus.

The past year has seen increasing acceleration towards better interfacing and compatibility, together with advances in communications. Examples of these developments can be found on several stands.

Significant is the new **BASF Computers** IBM plug-compatible 7/65 central processing unit, the first in a new series. This is to be displayed with the 6470 (IBM equivalent) disc drive which is making its UK debut at the exhibition.

BASF's magnetic media range remains the same, with the exception of a new 96 tpi floppy disc designed for use with the new 6118 mini-disc drive. Both of these will also be on display in the UK for the first time, as will the new style of BASF product packaging.

The Milton Keynes based company **Scicon** is to display its range of converters and interfaces for IBM and DEC users.

As well as showing a selection of its data communications equipment, including a range of fibre optic modems and multiplexers, there will be a demonstration of Cavis. This system mixes VHS video cassette pictures and videotex pages interactively on a TV screen, and is designed for use as a training aid.

Adaptability is to be found with the data transmission company **Kode's** new DEC compatible storage module. This has a capacity of 40 Mbytes and is on view for the first time.

The growing momentum in the communications field will be illustrated in the launching at Compec of Kode's range of voice recognition modules. These offer multiple vocabularies of 100 words each and are available as complete terminals, standalone units and also as multibus, Q-bus or VT100 compatible boards. They are designed to enhance the efficiency of a keyboard or to be used where data entry through a keyboard is inconvenient.

Concern to improve accuracy and efficiency is represented in the products of several exhibitors. For example, **Microsystem Services** of High Wycombe is to launch its programmable logic development system from Data I/O, which allows data development and testing.

Also on show from the same company will be Data I/O's digital troubleshooting system, which pinpoints faulty components in complex digital circuits.

A new three-colour version of **Tektronix UK's** digital analysis system, aimed at reducing potential mistakes by operators, will be on display from the company's design automation division. Tektronix aims at automating the microcomputer software development process in a new package which allows the programmer to work in Pascal throughout the cycle.

Accuracy in the production of bar-codes is essential, and **Photographic Sciences International** (formerly Harland Data Systems) of Hull is to exhibit a complete bar-code film master service, together with decoders, scanners and quality control reading equipment to ensure this.

The company creates bar-codes, alphanumeric codes and typeset text directly from computer generated instructions.

A full range of hand-held wand readers and laser beam scanners for reading bar-codes is to be displayed by **Pepperl and Fuchs**, the agents for the Italian Datalogic SpA.

The drive for efficiency can be seen in all areas, and one source of irritation throughout the industry has been eyestrain and glare from VDUs. **OCLI Europe** is to demonstrate its system for reducing both glare and reflections by anti-reflection thin film optical coatings. Special security screen versions suppress EMI/RFI emission for discreet display of sensitive information.

OCLI will also exhibit its [illegible] thin film cleaner for use on [illegible] types of VDU screens.

An efficient system of operation must also be a secure one, [illegible] security systems are continually being updated. Chubb Alarms is to display its access control systems which are designed for protecting computer installations.

The systems operate by use of a coded plastic card called [illegible] card, and also by ten-digit keypads. These not only prevent access, but can deny access at certain preset times and also record attempts at access.

Also on display is a range of intruder alarm systems and closed circuit television for all sizes of installations.

The importance of backup facilities and maintenance services is illustrated. A new tape management system which cleans and evaluates tapes can be seen on **Computer Link (UK)'s** stand, together with the company's combination disc pack inspector/cleaner with new degausser option. There is also on show a wide range of cleaning and maintenance products specifically intended for the computer.

A general maintenance service supplied by another exhibitor, **Hamilton Service**, which, in addition to supplying normal maintenance facilities, provides [illegible] preventative maintenance [illegible].

On two stands in particular there will be a strong [illegible] that the whole industry depends on the supply of electricity in a suitable environment. The Mitcham based company Air [illegible] can provide both air and power conditioning within the same enclosure with its new Acc[illegible] unit.

Backup facilities are provided by uninterruptible power supplies which regulate the power [illegible] and which are capable of being used as an emergency source of power when supported by a battery bank.

The company is also exhibiting a coolant supply unit for IBM [illegible] series processors, as well as

■ Turn to page 57

MISCELLANEOUS 2

■ From page 56

developments in microprocessor monitoring instrumentation and diagnostic systems.

The other company, **Andrews**, also of Mitcham, designs and installs its own range of packaged air conditioners for all types of computer installations. Andrews' hire service ensures a safety net in unexpected cases such as breakdown or unsatisfactory performance due to exceptional weather conditions.

There are to be three stands specialising in these and **Dean Electronics**, one of these, is introducing its Dovetail keyboard, which has add-on switch capability and which can be manufactured to virtually any configuration.

Dean Electronics is also showing thermal printers for the first time.

Three alternative technologies will be displayed in the range of keyboards presented by **Pye Electro-Devices** of Newmarket. These are springless monolithic keys, discrete keys and electronic touch keyboards. They are shown together with a range of switches, including panel mounted pushbutton, thumbwheel and level switches, and LEDs for panel mounting and circuit board indication.

Another company with a range of keyswitches and accessories is C.P. Clare, part of the General Instrument Corporation. These are for the OEM who chooses to construct his own keyboards. Clare is also giving the first UK preview of its new ergonomic linear capacitive keyboard technology, and is displaying, among other components, mercury and dry reed relays, surge arresters and the Clareswitch illuminated pushbutton range of switches and assemblies.

Peerless Foam Moulding of Tamworth, Staffordshire, is presenting its latest off-the-shelf system orbitor, comprising microprocessor box, tilt and swivel system and VDU enclosure in thermoplastic structural foam moulding.

The importance of design towards increased operating efficiency is stressed by **Project Office Furniture**, the Suffolk based producer of workstations, tables and storage units for housing computer software. These products will all be on display on the stand, together with Propaflor of Luton's solution to untidy wiring – a raised floor.

Easily constructed protub shelving, which needs neither nuts or bolts, will be on display from **The Paul Corbett Company** of East Grinstead, as well as a collapsible container made from polypropylene.

Yet another exhibitor, **Sarel Electric**, has a range of housing, cabinets and cases, as well as an under-desk unit to house the disc drive and mainframe units of microcomputers.

Training services and consultancy will be represented on three stands, and include training services for keyboard operators by **Keyboard Training**, a broad range of training services aimed at increasing efficiency and productivity of operators and data processing staff by **Protocol Operations**, and comprehensive services, including software development teams, by **AP Computer Consultants** of Maidenhead.

Your Computer is aimed at the home computer enthusiast whose computer and associated software typically costs less than £500. **Practical Computing** is directed at all personal computer users regardless of context or price.

Minicomputer is dedicated exclusively to the mini and micro fields, has a controlled circulation and is for those responsible for purchasing minis or micros.

What's New in Computing sets out to provide a comprehensive guide to new products whether hardware or software. The volume user, specialists and more complex systems sectors form the readership of **Computer Systems**.

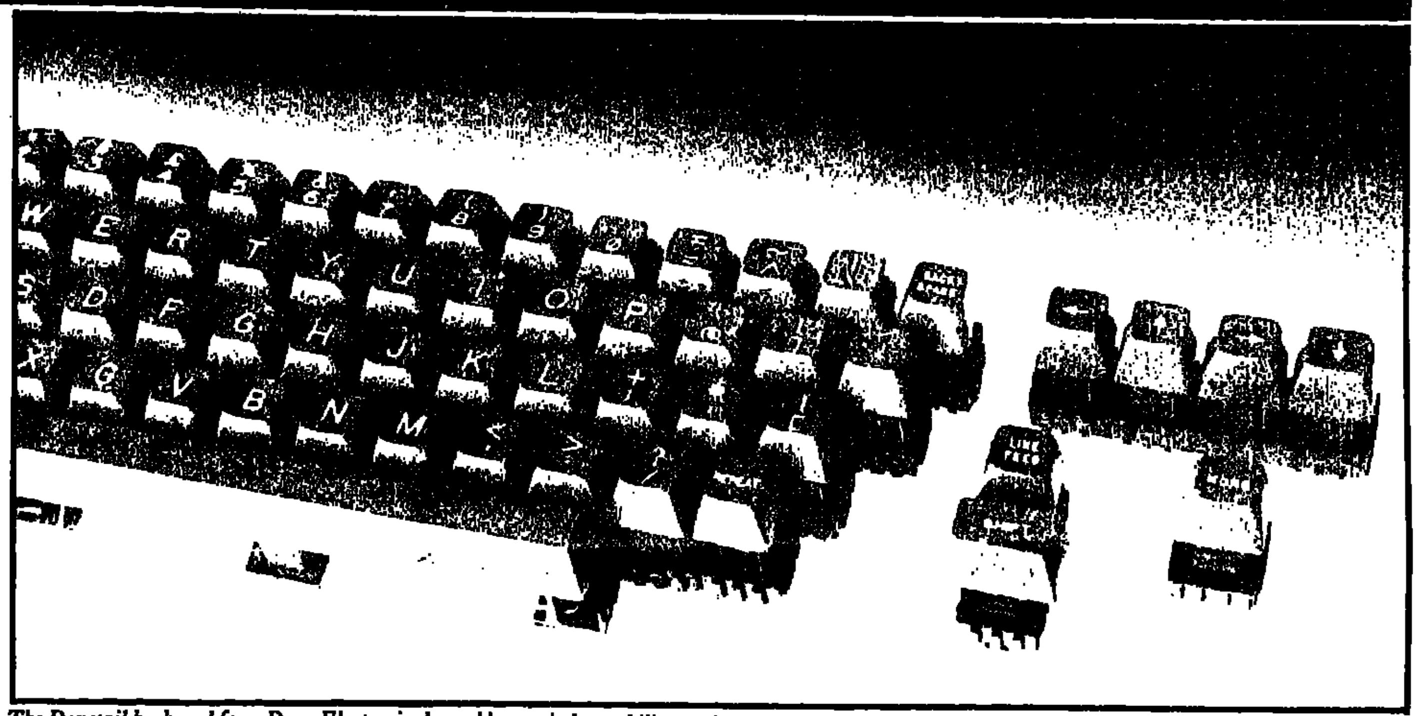
Also appealing to the more specialist market is **Datapro**, of Lausanne, Switzerland, which compiles loose-leaf reference volumes with monthly supplements and newsletters covering worldwide manufacturers of hardware and software.

Datapro also produces international reports and directories on computers as well as on automated office equipment.

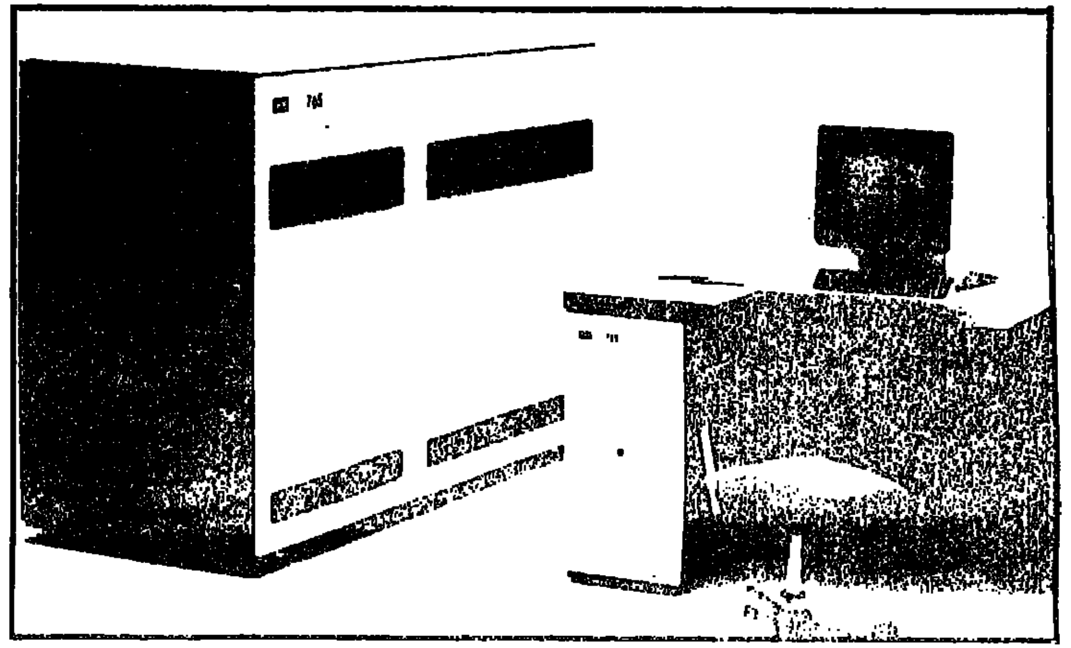
The weekly newspaper **Computing** aims at general news and features relating to the whole industry.

Together with the increasing number of computer magazines, there has been a rapid expansion in the range and number of books, especially on microcomputing. Over 250 titles are being displayed by the **Computer Bookshop** of Birmingham: these cover general programming topics, as well as games and programs for a variety of micro and pocket computers.

Prentice-Hall International will also have many books on these subjects for sale on its stand, including an extensive range of Howard W. Sams books.



The Dovetail keyboard from Dean Electronics has add-on switch capability, and can be manufactured to virtually any configuration, the company says.



The BASF 7/65 CPU, a 1.8 mips machine which can be upgraded to the same specification as the 2.5 mips 7/68.

COMPEC '82 Exhibition Preview

Kevin Cahill explains how last year saw the birth of more computer companies than ever

Why many banks are turning into real Aunt Agathas

FINANCE, in one form or another, is the lifeblood of any business enterprise.

Very few computer companies have ever made it into business without a loan or finance from either a bank, stockbroker, or that favourite if mostly mythical figure, Aunt Agatha.

Few in the computer industry have had enough personal finance to get an enterprise on the road. And yet last year, more computer companies – dealing in hardware, software and all the wares in between – got started than ever before.

Much of the backing for this blossoming of enterprise came from the Government Loan Guarantees scheme.

This scheme is operated by a range of banks, including the group known as the UK clearers, Barclays, Lloyds, Midland, National Westminster and Williams and Glyns. The government, through the Department of Industry, guarantees 80% of loans made to businesses under certain conditions.

The principle of these conditions, is that the banks must show that without the government guarantee, they would not have been able to make the loan.

Many people, as a result, have got loans that they would otherwise not have had without the fundamental problem of pledging their family home or some other major possession as collateral for the money.

The object of the scheme, which closely parallels schemes run in other countries including the US, was to persuade people, including those without personal assets, to put into operation business plans that would otherwise have been left on the shelf.

The government reasons that all this small scale activity will create the employment that big companies are losing through redundancies caused by the recession.

The government's year-one budget of £50 million for the scheme was hugely over-subscribed and was increased to £150 million within 18 months. Over 30,000 loans were made under the scheme, and the pace of disbursement continues at the same rate, according to a spokesman at the Department of Industry.

One of the early beneficiaries of the scheme was Larry Park of Quality Business Machines in Brighton, who got the maximum £75,000 loan under the scheme at a time when Quality Business Machines was employing seven people.

According to Park, one of the main advantages of the scheme is not having to worry about whether you are going to lose your home if there are problems with the business.

"The way the scheme is set up leaves you free to focus entirely on the business itself, which is what you need to do when you are in a start-up phase."


Naomi Langford-Wood got £45,000 from Barclays.

Park specialises in applying micros and associated software to tasks within the glass industry, including robotic design systems. QBM now employs 12 people and Park reckons that the scheme must be the cheapest way he knows to create employment.

The loan costs an additional 3% over the bank's lending rate, which is used to help insure the government against the inevitable failures within the scheme.

Barclays participates in the scheme, while also operating its own special variation, called a "business start loan". Although the loan has a theoretical limit of £100,000, Barclays will extend that to £150,000 where necessary.

The special feature of the loan is that no repayments at all are called for in under five years, unless sales targets agreed at the outset of the loan are met.

Interest is charged on the loan in the form of a royalty on sales, calculated to yield Barclays a gross return equal to the prevailing bank rate.

In practice, this turns out to be a very small percentage figure on sales. According to Naomi Langford-Wood, who raised £45,000 from Barclays to start her company PME, which is based in West London, she pays back about 0.5% of sales profit.

PME is a software specialist, supplying a range of software module systems made by American software house The Office Manager, but PME is developing its own software alongside the supplied products.

According to Langford-Wood, the form of the loan has made it possible to get the company to its current level of sales of just under £.5 million a year.

"If we had a heavy debt repayment each month, our ability to grow at our present rate would be severely restricted," she said.

Another successful entrepreneur who got his company on the road via a Barclays business start loan is John Hale of John Hale Computer Services. Back in 1979 Hale started JHCS to manufacture software to go on Honeywell DPS 6 minicomputers.

He got the company going initially with £10,000 saved, as he puts it, "from heavily taxed income". In 1980 he decided that to really get off the ground the company needed more money, so he wrote a business plan which so impressed Barclays that they made available £150,000, against the then loan ceiling of £50,000.

JHSC now has turnover approaching £1 million with software contracts in the UK and abroad worth over £350,000.

According to Jon Saunders, the manager of Barclays' Oxford Street branch which handles a number of large computer accounts, the bank is probably the first point of contact that a new computer business has with the financial world.

Typically, the bank manager is presented with a business plan which seeks to justify a request for finances to take the company through the difficult [illegible] period of the first year.

What then does the bank [illegible] for?

According to Saunders, it [illegible] clear perception by the [illegible] of the product they are [illegible] make and sell, its potential [illegible] tition and life time scale.

After that, the bank [illegible] will look at the company's [illegible] ment to see if it has the [illegible] run the business. He will [illegible] see if the level of finance [illegible] is sufficient and in the [illegible] of the planned level of sales, [illegible] deciding on how much [illegible] bank will part with.

The new management [illegible] show that it has worked [illegible] sensitive the plan is to sales [illegible] What if sales are slow to [illegible] for instance?

Ian Lovett, manager of [illegible] Sloane Square branch, [illegible] the business plan should [illegible] the ingredients described [illegible]

First of all, a history of [illegible] ness, if there is one. If the [illegible] is for a new enterprise, the [illegible] looking for the reasons for [illegible] ing that line of business.

Career histories of the [illegible] should be included, with [illegible] description of the markets [illegible] tend to enter, and the [illegible] marketing to be used. [illegible] to Lovett, one of the [illegible] parts of a business plan [illegible] outline of key objectives [illegible] first three years.

Over the past two years [illegible] clays has devoted more [illegible] the computer industry and [illegible] more money to it than [illegible] bank.

As an alternative to [illegible] bank lending there are [illegible] number of venture capital [illegible] sations operating in the UK

Venture capital is difficult [illegible] fine clearly. In principle, [illegible] early equity, or share-based [illegible] nancing of start-up [illegible] companies, with an [illegible] technology.

One of the newest UK [illegible] which will be represented [illegible] Welsh Development [illegible] stand at Compec, is Hafren.

To try and counteract the [illegible] of job losses that the area [illegible] perienced over the past [illegible] the Welsh Development [illegible] decided that it was not [illegible] pick up displaced jobs [illegible] panies relocating from [illegible] of the UK simply to take [illegible] tage of the cheap grants [illegible] tories that the WDA makes [illegible] able.

Hafren has as its objective [illegible] creation of a locally-based [illegible] small businesses in what are [illegible] the "sunrise industries" like [illegible] puting.

The company offers loans [illegible] investments at a rough charge [illegible] 7.5% currently over seven years [illegible]

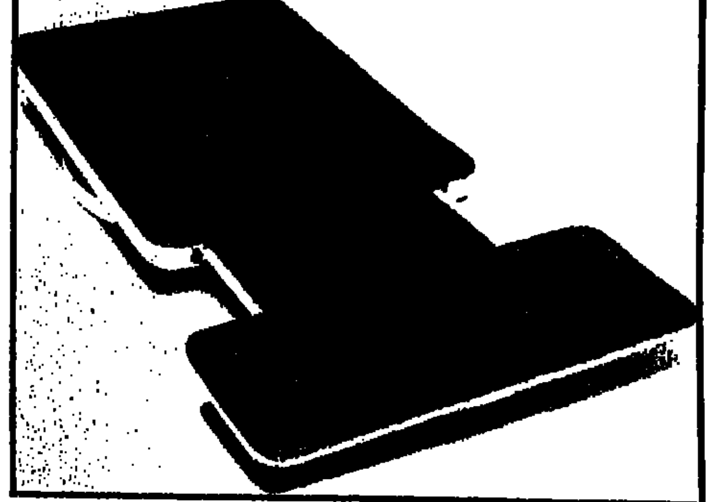
So far, the managers of the [illegible] have invested in 15 companies [illegible]

Since the scheme started [illegible] summer, Hafren has had [illegible] inquiries every working day [illegible] people interested in taking [illegible] tage of the offers. Many [illegible] computer companies, and [illegible]

COMPEC '82 Exhibition Preview

Cost should not always have priority, says Mike Sawyer

Delicate, demanding, the computer is the ultimate consumer


Turntables, like this from IBM, provide portability and easy access.

PROUD owners of newly-acquired computers soon learn that buying the hardware is only the first, although major, expense.

As ultimate consumer, the computer needs constant supplies.

Memories need discs, diskettes, or tapes – and spares for all three. Printers require ribbons, paper and the equipment itself needs a stable and uninterrupted power supply. Also required are air conditioning for cooling and filters to make sure the newly acquired object of affection doesn't become an inwardly dirty object.

Careful cleaning and regular servicing of everything from mainframes to micros, peripherals and magnetic media is essential if the equipment is to stay in top condition and fulfil the purpose it as bought for.

Storage for the mass of paper and magnetic media has to be found which is both safe and secure from the hazards of fire, theft and dirt, but at the same time easily accessible to the daily user.

Compec will give the visitor a whole host of supplies and suppliers to choose from.

Cost consciousness should not always be the first priority in supplies. Like the famous brand of washing-up liquid, supplies bought for quality rather than price will in the end give a longer life to the machine, and make things easier for the user and the *budget*.

Magnetic media items consumed in vast quantities by any computer or word processor, such as discs, diskettes, tapes, cassettes and cartridges will be found at the exhibition.

Present too will be the redoubtable services of magnetic media maintenance specialists. They can both extend and improve the quality of a tape's expensive life.

By shopping around, the visitor to Compec will gain knowledge of product ranges and will also be able to take advantage of the competition among rival magnetic media companies.

For the first time in the UK **Wabash Datatech** will be showing its new Silver Box range of diskettes. In eight-inch and 5¼-inch hard and soft formats are available in all current configurations including 48 TPI and the popular 96/100 TPI mini-diskette format. Wabash claims unsurpassed media wear for the product.

Wabash discs come complete with self-cleaning jacket and a long thread liner to hold contaminants away from the surface. The company says its diskette has received the US industry seal of approval by completing over 10 million passes in testing conducted by 25 disc drive manufacturers.

Also available on the stand are G-Tape and Quadronix magnetic tapes. Guaranteed 100% error free, the tapes come with a binder system and, the company says, a superior coating formula giving long term durability.

Major UK distributor for the Verbatim range of Flexible magnetic media, **BFI Electronics**, will be showing the entire Datalife range of discs.

Of interest here is a five-year warranty on Verbatim floppy discs and diskettes against what the company claims to be the industry standard of one year.

BFI will also be showing its new disc drive cleaning kits consisting of a flexible diskette jacket suited to eight, 5¼-inch or double-sided drives.

Alongside the Dysan range of discs, disc packs, diagnostic diskettes, ESI card cages and floppy copy service, **HAL Computers** is showing off the Oasis 820 universal peripheral exerciser.

A diagnostic tool, Oasis configures to a range of different peripherals by use of a plug-in modules. A full exercising sequence then follows.

For the technically minded, **JMF Computer Supplies** will show Compec visitors products in various stages of manufacture. These include discs, disc packs, cartridges and flexible media.

Goldline 3000 ribbons suited to over 1,000 different computer printers are will be shown by JMF together with all types of paper products, terminal workstations and cleaning facilities.

Looking for alternative heads may sound like a search for a punk band, but **VAS Computer Parts** claims the alternative head for CMD and SMD disc drives can provide an off-the-shelf solution to head crashes while saving about 30% on an original replacement.

VAS will also show air filters, a Control Data matrix printer and a range of rotating magnetic memories.

This year, Compec provides **BASF Computers** with a chance to make a UK debut for the 96 TPI Flexidisc, a 5¼-inch quadruple density floppy.

Showing alongside BASF's IBM plug-compatible cups is a range of disc and tape storage equipment.

For visitors with an eye to prolonging the life of expensive magnetic tape, the Data Devices International range of tape and disc maintenance equipment will be shown by **Eyecote** (Data Devices).

This includes Analyser, a microprocessor controlled tape cleaner and evaluator, and a high speed tape cleaner with disc pack cartridge cleaning and inspection equipment.

Also on show from Eyecote is a line of diskette drive head cleaning kits and diskette magazines.

Graham UK, sole distributor for half-inch tape technology specialist Graham Magnetics, will show the Inspector IV 1600/6250 MPC evaluator/cleaner and the Detector II, a new vacuum system tape cleaner.

An important part of Graham's tape management range is the Protector autoload collar cleaner and its magnetic tape service including tape library analyses, cleaning and evaluation on and off-site, and rentals.

Leeway Data Products will be exhibiting a range of disc drive replacements for OEM and end users.

Leeway is exclusive distributor for US-based Information Magnetics Corp and Aluminium Filter. On the stand will be shown a variety of HEPA and other air filters, including a new range of mini filters for use on Winchester drives.

Spare parts will be demonstrated by **Norman Magnetics**, a British company specialising in manufacture and repair for most types of magnetic media including Phoenix removable disc cartridges, and a range of floppies and tape.

European representation at Compec will come from France and West Germany.

Nowak Datentrager will be showing parts and peripherals for disc drives, magnetic heads, tape heads and air filters.

Batting for the French will be the elegantly-named **Rhone Poulenc Systemes Company** exhibiting Flexette eight and 5¼-inch floppies guaranteed to provide error free and extended working life.

Positively the last word on discs is the claim by **DN Computer Services** that its ODP extended performance diskette has almost 10 times the industry standard guarantee of performance and media life.

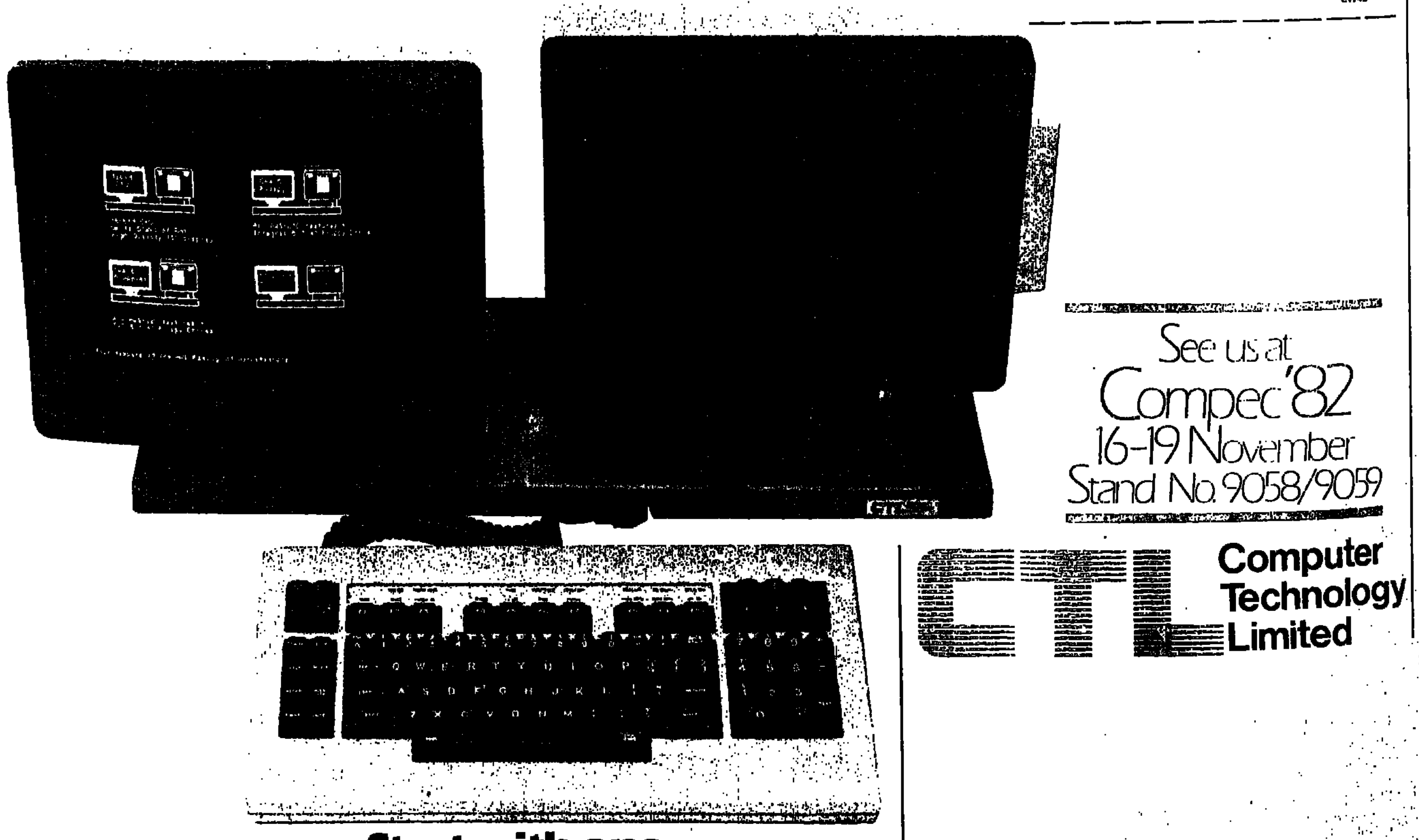
DNCS says the diskette is guaranteed for 12 months against manufacturing defect and that each individual track will withstand more than 1,500 hours of continuous usage.

Storage has to provide the user with several things. Ease of use must come as first priority. Systems at Compec include ranges suited to an office, home and user department.

Security from theft is another point to look for. Of course, the storage media itself can be lifted and taken away easily by thieves, but many companies exhibiting at Compec at least provide locks to prevent unauthorised access.

Protection from fire and the atmosphere are also important. Companies will show systems designed for fire safes together with

■ Turn to page 61



SUPPLIES/SERVICES 2

From page 59

such items as self cleaning jackets for discs.

A range of furniture for safe and easily accessed storage will also be on show, together with such niceties as ergonomically designed tables and chairs. After all, the computer user must be comfortable too.

New products just out for Compec are **ABA Systems'** range of storage boxes for microfiche and floppy discs.

Using a V-shaped design for easy retrieval, the boxes allow for rapid and precise access to microfiche. Security-conscious ABA also fits the boxes with anti-static, transparent and lockable lids.

Up to 1,200 microfiche can be stored in the MF1200 mode 1 and 500 in the MF500. Card dividers are inclusive.

Specially designed for fire-proof and lateral filing cabinets, ABA has also introduced four new floppy disc boxes, to go along with its standard eight and 5¼-inch storage boxes.

With the new system, disc capacity is either 120 or 150 for both types of disc. Again card rests are included, four for smaller discs and five for the larger.

Information Equipment Maintenance (IEM) will be showing a broad range of Ring King magnetic filing systems.

These include diskette file trays, suspension files, easel binders, looseleaf files and a rotary stand giving protective filing to 150 discs within 75 non-glare vinyl files. For easy retrieval, there is the flip file allowing 20 discs to be stored in a shelf drawer.

For the executive hard at work with micros mounted on the desk, IEM will be showing desk indexes with storage for 20 or 30 discs. Inserts, coloured tabs or labels are provided with all systems for coding and a quick search.

Data cartridge filing systems are also available from IEM. In looseleaf, suspension tab, storage tray, easel binder and rotary stand format, a whole range of capacities is achievable.

Industrial 19-inch racking in the form of swing rack boxes will be on show by **Sarel Electric**. The cabinets come in varying heights allowing for the full swing of 300mm deep equipment.

Sarel will also be showing a 19-inch under-desk unit to house disc-drive and mainframe units for micros.

Another exhibitor showing media housing will be **Carter-Parratt** with the Wright Line system for operational and user departments.

Docu-mate binders will also be featured on the stand. The system has just two sizes of binders, one for A4 and smaller, the other for print out larger than 12 inches. In six colours and three widths, Docu-mate, it is claimed, can carry even the thickest print-out and the system can be stored in desktop units, mobile units and cabinets.

Optimedia is the Carter-Parratt line in cabinets. Virtually anything you think of can be stored, is the claim for the product which can take Docu-mate, tape seal tape housing, discs, manuals, cassettes, floppies and reels.

There is also a range of terminal desks in a variety of sizes and heights available.

Launched in time for Compec is the **DN Computer Service Company's** patented daisywheel printer cleaner.

Of particular interest to users of word processing printers, DNCS claims its product can clean a daisywheel of clogging ink, carbon or paper dust quickly, efficiently and with no mess, thereby extending considerably the useful life of an expensive item.

Equipment to provide portability and ease of access to computer systems will be on show. Turntables allow the user to access to a terminal from any direction and mean a system used part-time can be stored neatly away.

Discounts of 15% on turntables for VDU systems will be available for Compec visitors from the stand of **Information Equipment Maintenance.**

Rotating through 360 degrees, the turntables allow total flexibility and provide access to more than one operator as well as simply avoiding reflections or servicing disruptions.

Standard models can bear 25 kg while the heavier version allows up to 100 kg. A black ribbed matt surface provides non-slip grip.

All models can be customised, and with a centre access facility (hole in the middle) electrical leads can pass through the middle of the turntable.

IEM will also be showing an anti-glare screen which has turned out to be very popular with VDU users in past years.

Some of life's little problems include the constant threat of power black-out for reason of politics, bad wiring or bad weather. Back-up systems will provide a vital power source instantly, allowing time for shut down and the retrieval of important information.

Uninterruptible power source units (UPS systems) will be on show this year from **Sola Electric**, part of General Signal in America.

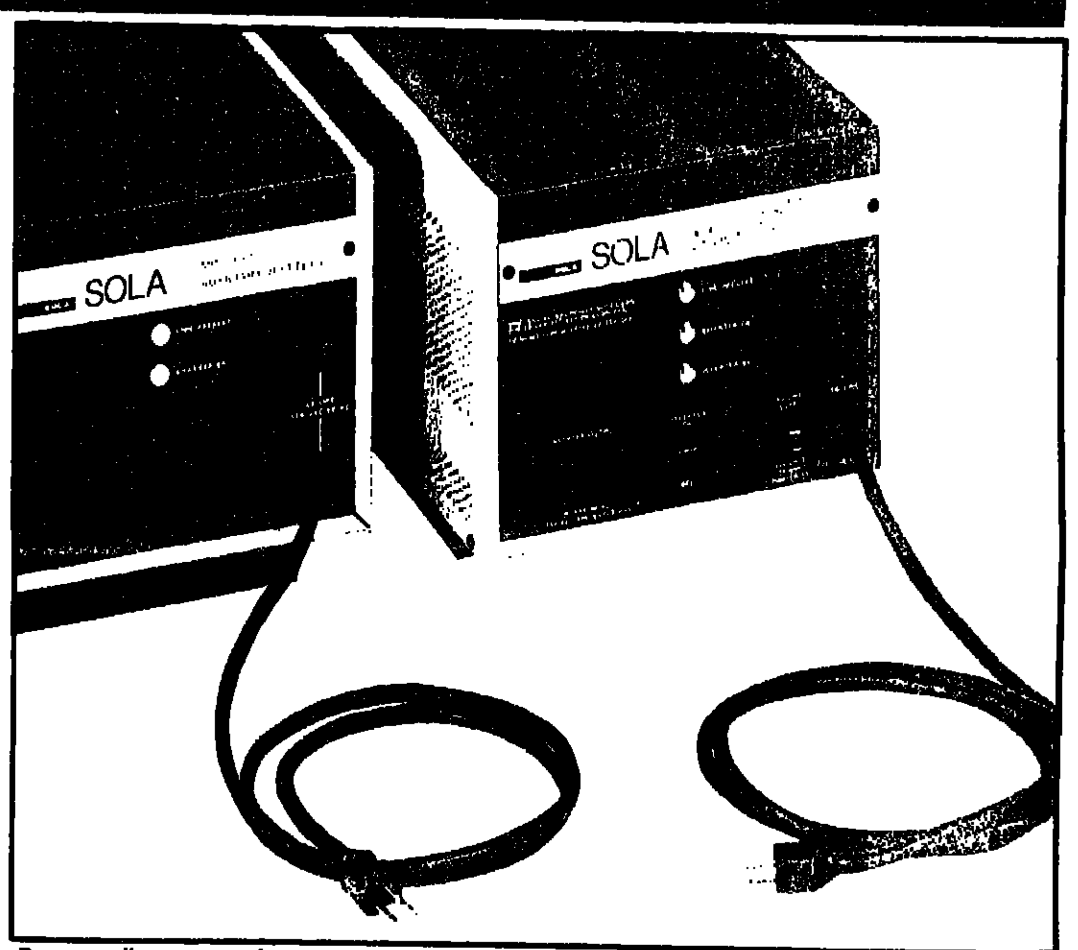
Mini UPS systems designed to operate on 50 Hz of power for the international market are intended to protect electrical equipment from potential AC power line problems, including blackouts, brownouts, transients and noise.

In 300 and 600 VA ratings, Sola's mini UPS can be used with micros, communications equipment, electrical lab monitors, PoS terminals and other low power digital electronics.

Under conditions of power failure the self contained UPS provides up to 24 minutes of regulated power at full load. Drained batteries are automatically recharged once power is restored. Switchover is automatic as the unit is always online and fully charged.

As a back-up to the back-up, Sola has introduced an auxiliary battery pack to the UPS which provides an additional 60 minutes of DC power to the 400 VA UPS model and 30 minutes to the 700 VA UPS.

All-in-one: the Verbatim media range from BFI.



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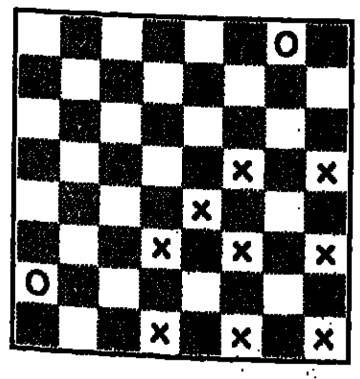

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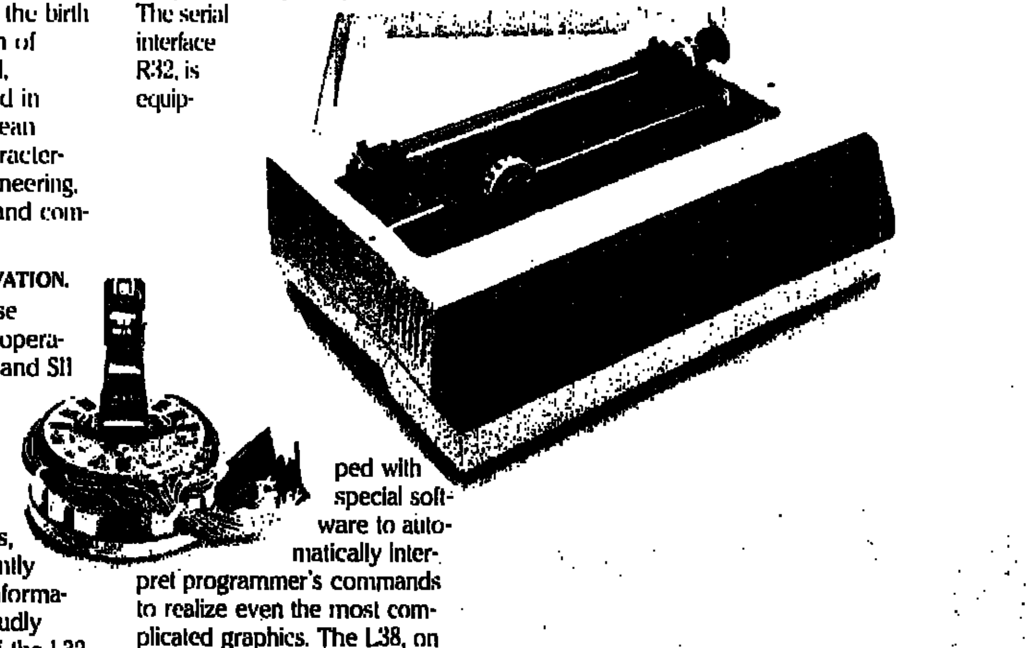

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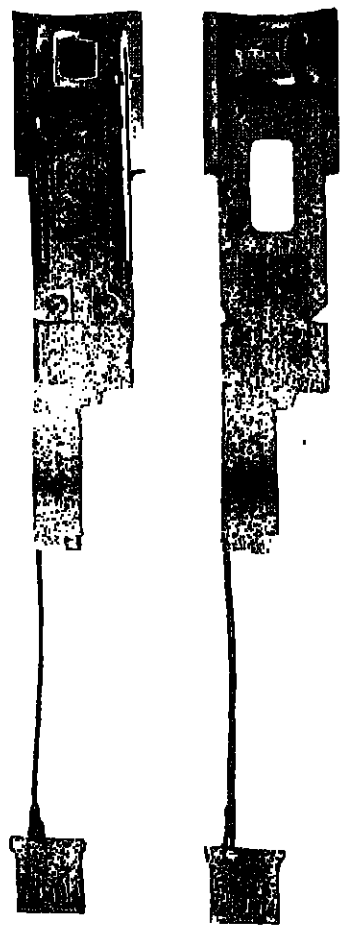

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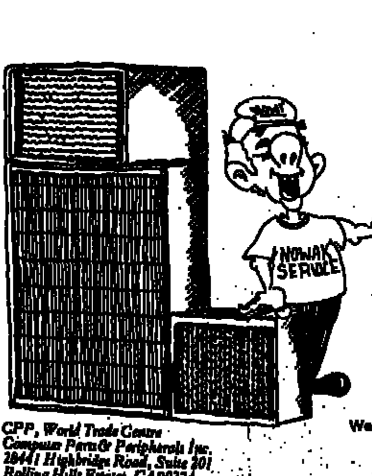

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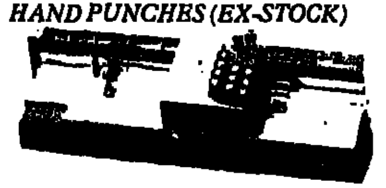

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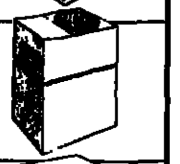

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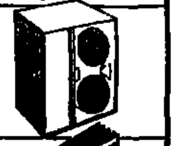

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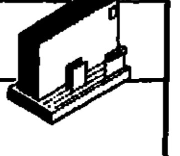

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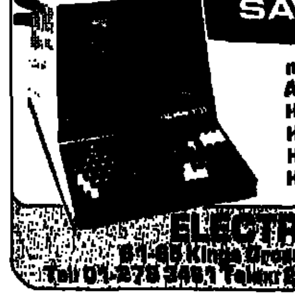

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